

Visual TikZ

Version 0.65

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Objectifs :

- Avoir une image par commande ou par paramètre.
- Avoir un texte réduit au strict minimum.
- Etre le plus complet possible au fil de mises à jour régulières.
- Garder la même structure que visuel pstricks

Remarques : Le code donné est minimal et ne sert qu'à montrer les commandes concernées. Les effets sont parfois exagérés pour bien les mettre en évidence. Pour en savoir plus, vous pouvez voir la documentation. Pour se faire j'ai indiqué le numéro de Section de pgfmanual

Vous pouvez me contacter à mon e-mail personnel pour

- me signaler les erreurs que vous avez constatés (merci d'indiquer la page où vous l'avez constaté)
- me faire part de vos commentaires, suggestions ...

Quoi de neuf! :

- Résolution partielle du conflit entre `\usetikzlibrary{patterns}` (16) et `\usepackage{tikz-people}` (122)
- Ajout matrices de nœuds 54
- Ajout « library matrix » 57
- Ajout du module tikzducks 129

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This work has the LPPL maintenance status 'maintained'.

The Current Maintainer of this work is M. Jean Pierre Casteleyn.

Merci à :

Till Tantau , Alain Matthes , Jim Diamond , Falk Rühl , Axel Kielhorn , Nils Fleischhacker , Michel Fruchart

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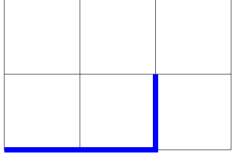
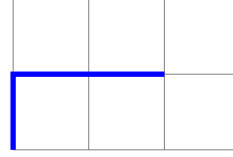
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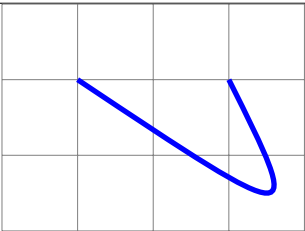
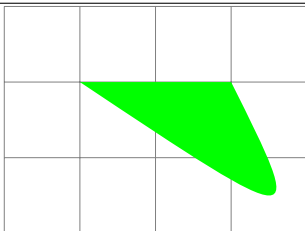
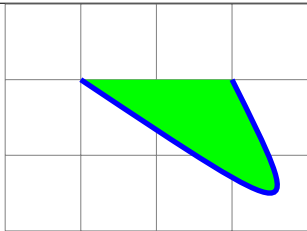
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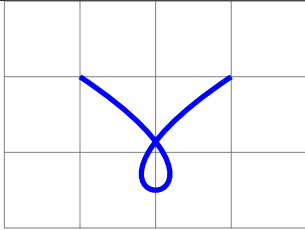
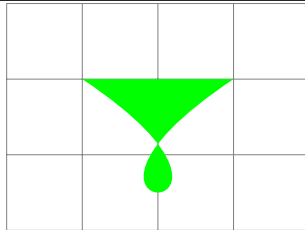
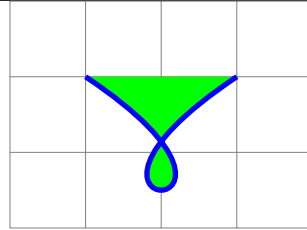
1 Chargement de TikZ

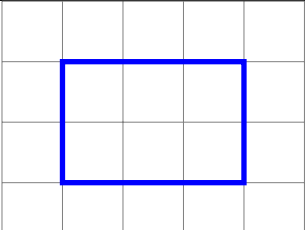
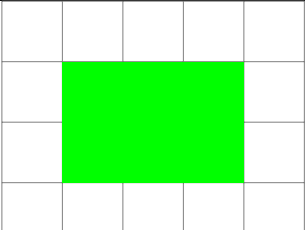
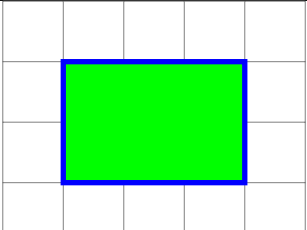
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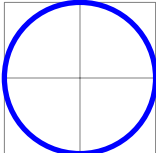
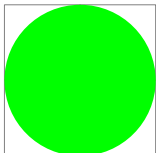
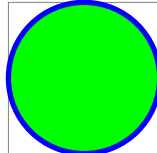
2 Les figures de base

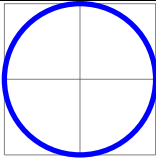
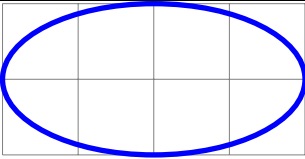
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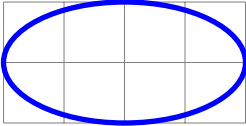
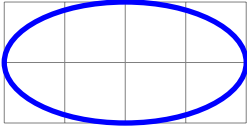
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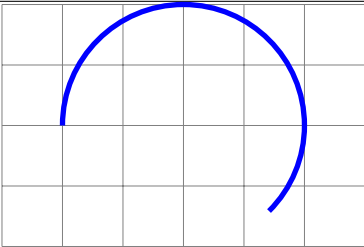
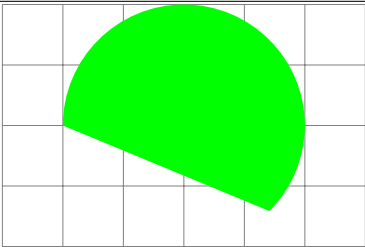
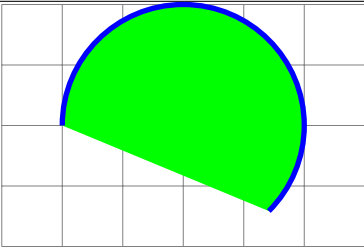
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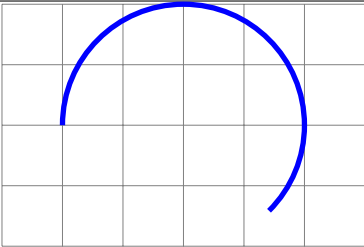
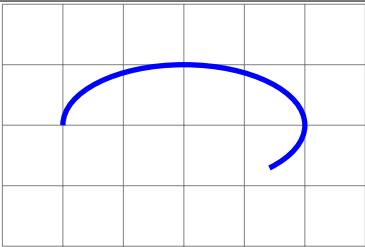
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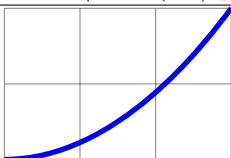

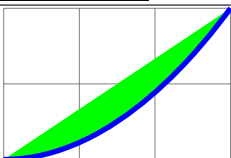
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|  |  |  | |
| <code>\draw</code> | <code>\fill</code> | <code>\filldraw</code> | |

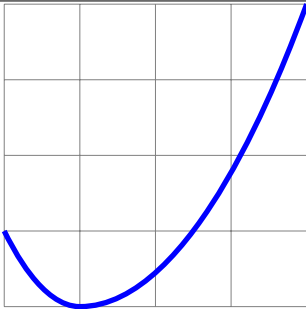
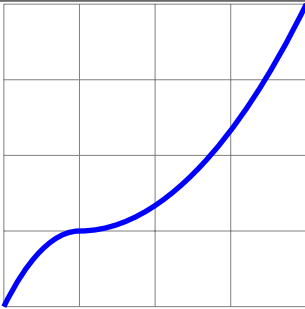
| | |
|---|---|
| <code>\draw (1,1) circle [radius=1cm];</code> | <code>\draw (1,1) ellipse [x radius=2cm,y radius=1cm]</code> |
|  |  |
| <code>radius=1cm</code> | <code>x radius=2cm,y radius=1cm</code> |

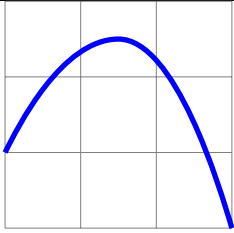
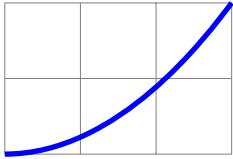
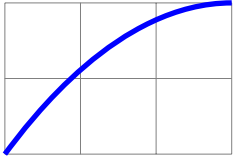
| | |
|---|---|
| <code>\draw (1,1) circle (2 and 1);</code> | <code>\draw (1,1) ellipse (2 and 1);</code> |
|  |  |


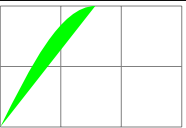
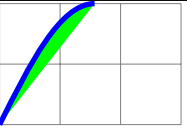
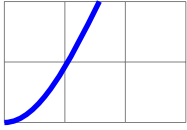
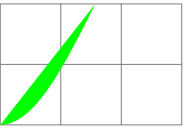
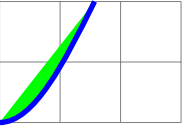
| | | |
|---|---|--|
| <code>\draw (-2,0) arc (180:-45:2);</code> PGFmanual section : 14-7 | | |
|  |  |  |
| <code>\draw</code> | <code>\fill</code> | <code>\filldraw</code> |

| | |
|---|---|
| <code>\draw (-2,0) arc [start angle=180, end angle=-45,radius=1]</code> | <code>\draw (-2,0) arc (180:-45:2 and 1)</code> |
|  |  |
| <code>radius=1</code> | <code>x radius=1,y radius=.5</code> |

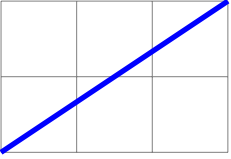
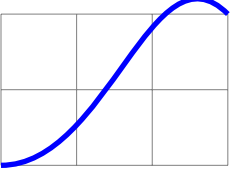
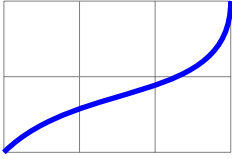
| | | |
|---|---|---|
| <code>\draw (0,0) parabola (3,2);</code> PGFmanual section : 14-9 | | |
|  |  |  |
| <code>\draw</code> | <code>\fill</code> | <code>\filldraw</code> |

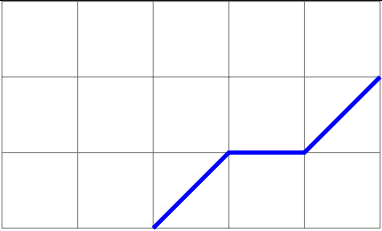

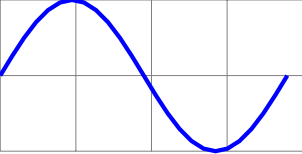
| | |
|---|--|
|  |  |
| <code>\draw(0,1) parabola bend (1,0) (4,4);</code> | <code>\draw(0,0) parabola[bend pos=0.25] (4,4);</code> |

| | | |
|---|---|---|
| <code>\draw(0,1) parabola [parabola height=2cm] (3,0);</code> | <code>\draw(0,0) parabola[bend at start] (3,2);</code> | |
|  |  |  |
| | <code>[bend at start]</code> | <code>[bend at end]</code> |

| | | |
|---|---|---|
| <code>\draw (0,0) sin (1.57,2);</code> PGFmanual section : 14-10 | | |
|  |  |  |
| <code>\draw</code> | <code>\fill</code> | <code>\filldraw</code> |
|  |  |  |
| <code>\draw (0,0) cos (1.57,2);</code> | | |

PGFmanual section : 14-13

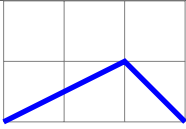
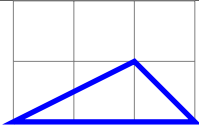
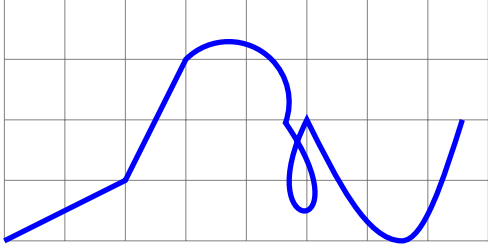
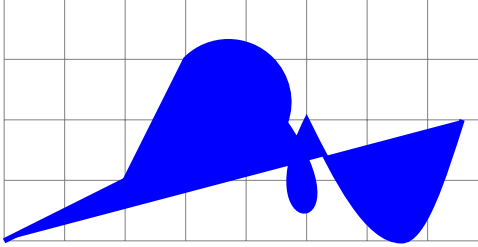
| | | |
|---|---|--|
|  |  |  |
| <code>\draw (0,0) to (3,2);</code> | <code>\draw[out=0] (0,0) to (3,2);</code> | <code>\draw[in=-90] (0,0) to (3,2);</code> |
| voir section 7.2 page 47 | | |

| Dessin avec plot PGFmanual section : 14-12 PGFmanual section : 22 | | |
|---|---|--|
| une liste de coordonnées | un fichier de coordonnées | une équation mathématique |
|  |  |  |
| plot coordinates {(2,0) (3,1) (4,1) (5,2)} | plot file {table.dat} | plot (\x,{sin(\x)}) |
| voir page 134 | | |

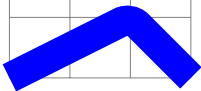
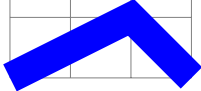
3 Chemin

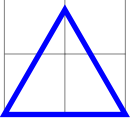
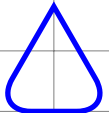
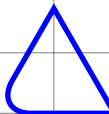
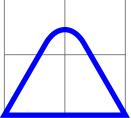
3.1 Notion de Chemin

PGFmanual section : 14

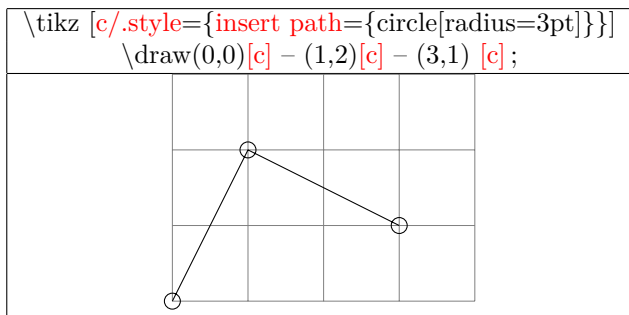
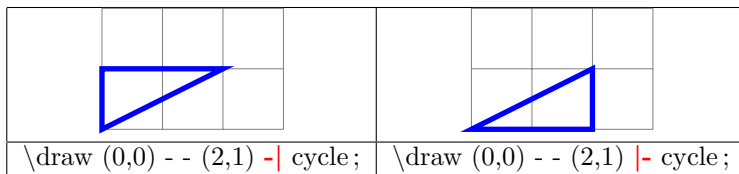
| | |
|--|--|
|  |  |
| <code>\draw (0,0) -- (2,1) -- (3,0);</code> | <code>\draw (0,0) -- (2,1) -- (3,0) -- cycle;</code> |
| <code>\draw (0,0) -- (2,1) -- (3,3) arc (135:-20:1) .. controls (6,0) and (4,0) .. (5,2) sin (6.57,0) cos (7.57,2);</code> | |
|  |  |
| <code>\draw</code> | <code>\filldraw</code> |

PGFmanual section : 14-5

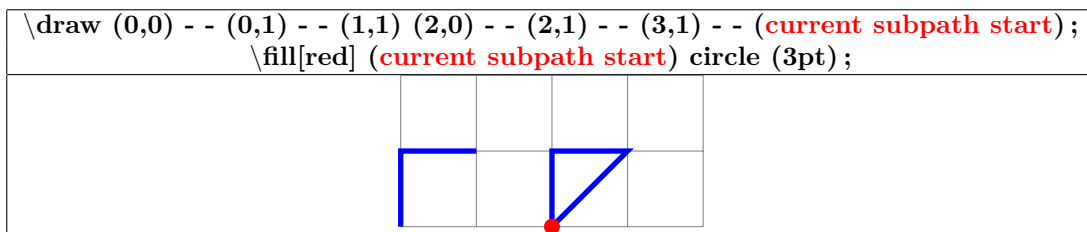
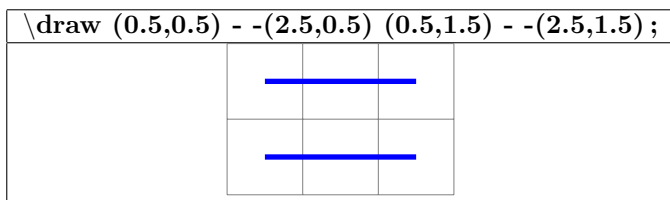
| | |
|---|--|
|  |  |
| <code>\draw [rounded corners] (0,0) -- (2,1) -- (3,0);</code> | <code>\draw [sharp corners] (0,0) -- (2,1) -- (3,0);</code> |

| | |
|---|---|
|  | <code>\draw [rounded corners=0.5cm] (0,0) -- (1,1.732) -- (2,0) -- cycle;</code> |
|  | <code>\draw (0,0) -- (1,1.732) [rounded corners=0.5cm] -- (2,0) -- cycle;</code> |
|  | <code>\draw (0,0) -- (1,1.732) -- (2,0)[rounded corners=0.5cm] -- cycle;</code> |
|  | <code>\draw [rounded corners=0.5cm] (0,0) -- (1,1.732)[sharp corners] -- (2,0) -- cycle;</code> |

PGFmanual section : 14-2-2

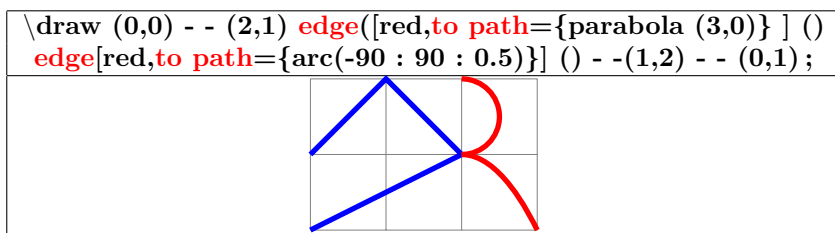
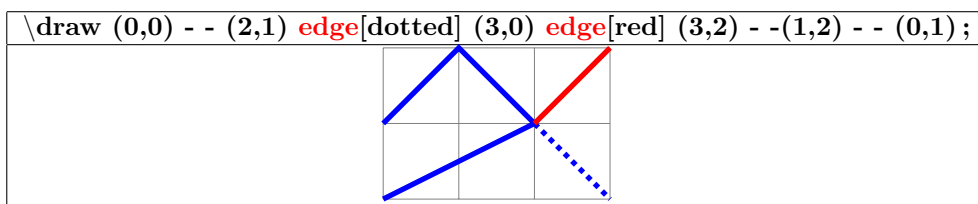


Coupure de chemin PGFmanual section : 14-1



3.2 Chemins dans un chemin









PGFmanual section : 17-12





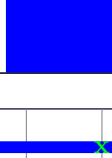


4 Les paramètres disponibles





4.1 Épaisseur de ligne

PGFmanual section : 15-3-1

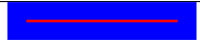
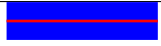
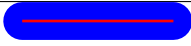
| | | | |
|---|---|---|---|
| <code>\tikz \draw[line width=.2cm] (0,0) - - (1,1);</code> | | | |
|  |  |  |  |
| <code>[line width=.2cm]</code> | <code>[ultra thin]</code> (0.1pt) | <code>[very thin]</code> (0.2pt) | <code>[thin]</code> (0.4pt) |
|  |  |  |  |
| <code>[semithick]</code> (0.6pt) | <code>[thick]</code> (0.8pt) | <code>[very thick]</code> (1.2pt) | <code>[ultra thick]</code> (1.6pt) |

4.2 Dimensions disponibles

| | |
|---|---|
|  | <code>\draw[line width=10pt] (2,0) to (2,1);</code> |
|  | <code>\draw[line width=10bp] (2,0) to (2,1);</code> |
|  | <code>\draw[line width=10mm] (2,0) to (2,1);</code> |
|  | <code>\draw[line width=1cm] (2,0) to (2,1);</code> |
|  | <code>\draw[line width=1in] (2,0) to (2,1);</code> |

| | |
|---|---|
|  | <code>\draw[line width=1ex] (0,0.5) to (4,.5);</code> |
|  | <code>\Huge \draw[line width=1ex] (0,0.5) to (4,.5);</code> |
|  | <code>\draw[line width=1em] (2,0) to (2,1);</code> |
|  | <code>\Huge \draw[line width=1em] (2,0) to (2,1);</code> |

4.3 Terminaisons de lignes

| | | |
|---|---|---|
|  |  |  |
| <code>[line cap=rect]</code> | <code>[line cap=butt]</code> | <code>[line cap=round]</code> |

4.4 Jonction de lignes

| | | |
|---|-------------------|-------------------|
| \draw[line join=round] (0,0) - - (2,1) - - (0,2); | | |
| | | |
| [line join=round] | [line join=bevel] | [line join=miter] |


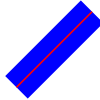


| | | |
|--|---------------|---------------|
| \draw[miter limit=1] (0,0) - - (2,1) - - (0,2); (Par défaut : : miter limit=10) | | |
| | | |
| miter limit=1 | miter limit=2 | miter limit=3 |



4.5 Styles de ligne

PGFmanual section : 15-3-2

| | | |
|--|------------------------|------------------------|
| \tikz \draw[solid,line width=2mm] (0,0) - - (2,1); | | |
| | | |
| [solid] | | |
| | | |
| [dotted] | [densely dotted] | [loosely dotted] |
| | | |
| [dashed] | [densely dashed] | [loosely dashed] |
| | | |
| [dash dot] | [densely dash dot] | [loosely dash dot] |
| | | |
| [dash dot dot] | [densely dash dot dot] | [loosely dash dot dot] |

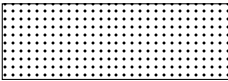


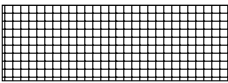
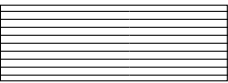
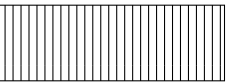
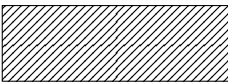
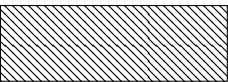
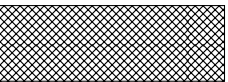
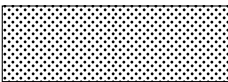
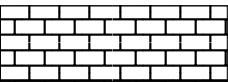
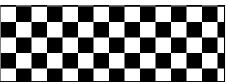
| | | |
|--|--|--|
| | | |
| [dash pattern=on 1cm off 0.25cm on 0.25cm off 0.5cm] | | |
| | | |
| [dash pattern=on 1cm off .25cm on .25cm off .5cm,dash phase=1cm] | | |

| \tikz \draw[line width=.2cm, double] (0,0) - - (1,1) ; | | | |
|---|---|---|---|
|  |  |  |  |
| double | draw=blue,double=red | double distance=.3cm | double distance between line centers =.3cm |

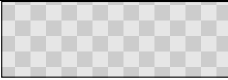
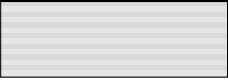
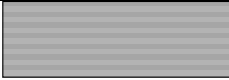
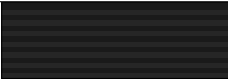
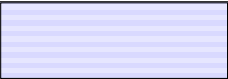



| \Huge = \tikz \draw[double equal sign distance] (0,0) - - (4,0) ; | |
|---|---|
|  |  |
| = | = |
| \Huge | \large |

4.6 Remplissage en motifs

Charger l'extension : \usetikzlibrary{patterns}

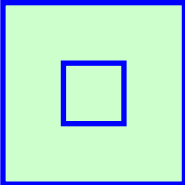
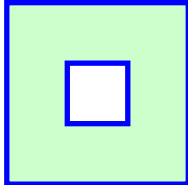
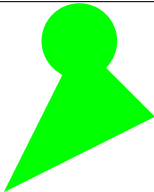
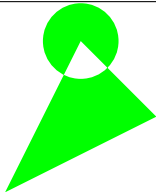
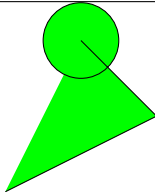
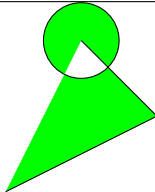
| \draw[pattern= dots] (0,0) - - (3,1) ; | | |
|---|---|---|
|  |  |  |
| dots | fivepointed stars | sixpointed stars |
|  |  |  |
| grid | horizontal lines | vertical lines |
|  |  |  |
| north east lines | north west lines | ros hatch |
|  |  |  |
| cross hatch dots | bricks | checkerboard |

| |
|---|
|  |
| \draw[pattern=fivepointed stars, pattern color=red] (0,0) rectangle (3,1) ; |

| | | |
|---|---|---|
| <code>\draw[pattern=checkerboard light gray] (0,0) -- ((3,2);</code> | | |
|  |  |  |
| checkerboard light gray | horizontal lines light gray | horizontal lines gray |
|  |  |  |
| horizontal lines dark gray | horizontal lines light blue | horizontal lines dark blue |
|  |  | |
| crosshatch dots gray | crosshatch dots light steel blue | |




4.7 Règle de remplissage

PGFmanual section : 15-5-2

| | | | |
|--|---|--|---|
| nonzero rule (Par défaut :) | | | |
|  | |  | |
| <code>\filldraw [fill=green !20]</code> <code>(0,0) -- (0,3) -- (3,3) -- (3,0) -- cycle</code> <code>(1,1) -- (1,2) -- (2,2) -- (2,1) -- cycle;</code> | | <code>\filldraw [fill=green !20]</code> <code>(0,0) -- (0,3) -- (3,3) -- (3,0) -- cycle</code> <code>(1,1) -- (2,1) -- (2,2) -- (1,2) -- cycle;</code> | |
| even odd rule | | | |
| <code>\[fill=[green] (0,0) -- (2,1) -- (1,2) circle (.5cm);</code> | | <code>\filldraw[fill=green] (0,0) -- (2,1) -- (1,2) circle (.5cm);</code> | |
|  |  |  |  |
| <code>[fill=green]</code> | <code>[even odd rule,fill=green]</code> | <code>[fill=green]</code> | <code>[even odd rule,fill=green]</code> |

4.8 Remplissage à l'aide d'une image

PGFmanual section : 15-6

| | | | |
|---|---|---|--|
| <code>\draw [path picture={\node at (path picture bounding box.center) {\includegraphics[height=3cm]{tiger}}};] (0,1) circle (1);</code> | | | |
|  |  |  | |
| <code>(0,1) circle (1)</code> | <code>(0,0) -- (-1,1) -- (0,2) -- (1,1) -- cycle</code> | <code>(1,0) parabola[parabola height=2cm] (3,0)</code> | |

| | | | | |
|--|-------|------|------|------------|
| <code>\draw [path picture={ \node at (path picture bounding box.north) { \includegraphics[height=3cm]{tiger}} ;}] (0,1) circle (1);</code> | | | | |
| | | | | |
| north | south | east | west | south east |

4.9 Ombrage

4.9.1 Ombrages disponibles

PGFmanual section : 15-7

| | |
|--|--|
| | |
| <code>\shade (0,0) rectangle (3,1);</code> | <code>\shadedraw (0,0) rectangle (3,1);</code> |

| | | |
|---|--------|------|
| <code>\shadedraw[shading=axis](0,0) rectangle (3,1);</code> | | |
| | | |
| axis | radial | ball |

| | | |
|-------------------------------|-----------------------------------|---|
| | | |
| <code>[left color=red]</code> | <code>[right color=green]</code> | <code>left color=red,right color=green</code> |
| | | |
| <code>[top color=red]</code> | <code>[bottom color=green]</code> | <code>middle color=red</code> |


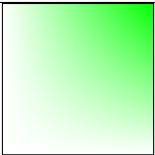
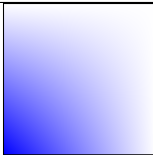
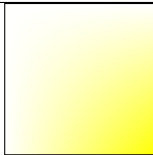
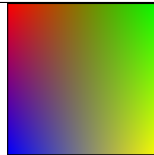
| | | |
|-------------------------------|---|---|
| | | |
| <code>shading angle=90</code> | <code>right color=green</code> <code>[shading angle=45]</code> | <code>left color=red</code> <code>shading angle=-45</code> |

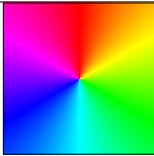


| | | |
|------------------------------|--------------------------------|--|
| | | |
| <code>inner color=red</code> | <code>outer color=green</code> | <code>inner color=red outer color=green</code> |

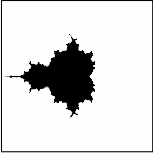
4.9.2 Bibliothèque shadings

PGFmanual section : 65

Charger l'extension : `\usetikzlibrary{shadings}`





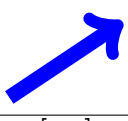
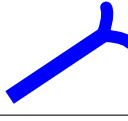
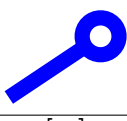
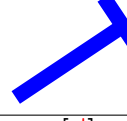
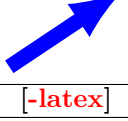

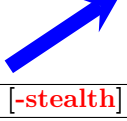

| | | | | |
|---|---|---|--|---|
| \shadedraw[upper left=red] (0,0) rectangle (2,2); | | | | |
|  |  |  |  |  |
| upper left=red | upper right=green | lower left=blue | lower right=yellow | |

| | | |
|---|---|---|
| \shadedraw[shading=color wheel] (0,0) rectangle (2,2); | | |
|  |  |  |
| shading=color wheel | shading=color wheel black center | shading=color wheel white center |

| |
|---|
|  |
| shading=Mandelbrot set |


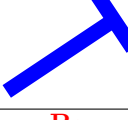
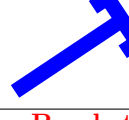
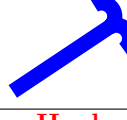

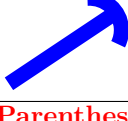














4.10 Les extrémités

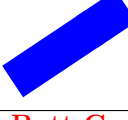
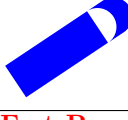
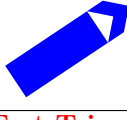
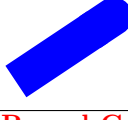
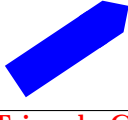
4.10.1 Chargé automatiquement avec TikZ

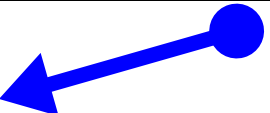
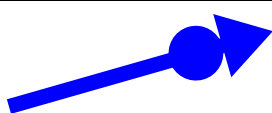
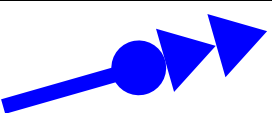
| \tikz \draw[->,line width=.2cm,blue] (0,0) - - (1.5,1) ; | | | |
|---|---|---|---|
|  |  |  |  |
| [>] | [<-] | [<->] | [>->] |
|  |  |  |  |
| [-to] | [-to reversed] | [-o] | [-] |
|  |  |  |  |
| [-latex] | [-latex reversed] | [-stealth] | [-stealth reversed] |

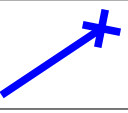
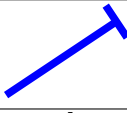
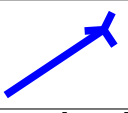
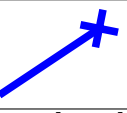
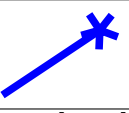
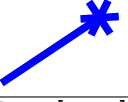
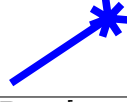
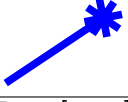
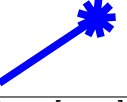
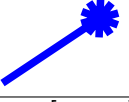
4.10.2 « library arrow.meta »

Charger l'extension : \usetikzlibrary{arrows.meta}


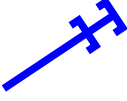
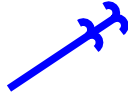


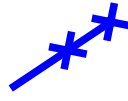

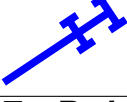
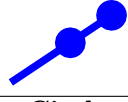
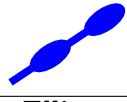


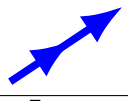
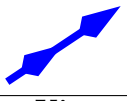
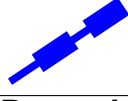
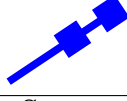
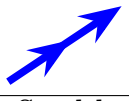
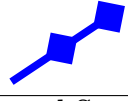
| \tikz \draw[-Arc Barb,line width=.2cm,blue] (0,0) - - (1.5,1) ; | | | | |
|---|---|---|--|---|
|  |  |  |  |  |
| -Arc Barb | -Bar | -Bracket | -Hooks | -Stealth |
|  |  |  |  |  |
| -Parenthesis | -Straight Barb | -Tee Barb | -Classical TikZ Rightarrow | -Square |
|  |  |  |  |  |
| -Circle | -Implies, double | -Rectangle | -Computer Modern Rightarrow | -Turned Square |
| | | | [To] | |
|  |  |  |  |  |
| -Diamond | -Ellipse | -Kite | [-Latex] | -Triangle |




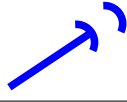

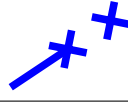

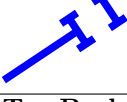
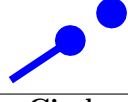

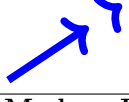
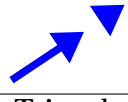
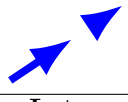
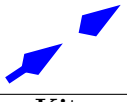
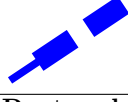
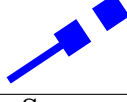

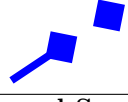
| \tikz \draw[-Butt Cap,line width=.2cm,blue] (0,0) - - (1.5,1) ; | | | | |
|---|---|---|---|--|
|  |  |  |  |  |
| -Butt Cap | -Fast Round | -Fast Triangle | -Round Cap | -Triangle Cap |

| | | |
|---|---|--|
| <code>\tikz \draw[Triangle-Circle,line width=.2cm,blue] (0,0) - - (3.5,1);</code> | | |
|  |  |  |
| Triangle-Circle | <code>{Circle[] Triangle[]}</code> | <code>{Circle[] . Triangle[] Triangle[] }</code> |

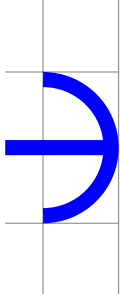
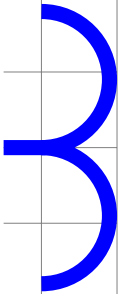
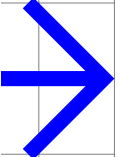


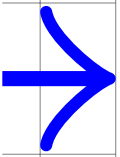
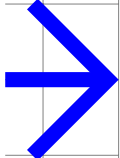




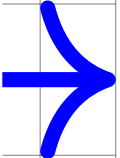
| | | | | |
|---|---|---|---|--|
| <code>\tikz \draw[-Rays,line width=.1cm,blue] (0,0) - - (1.5,1);</code> | | | | |
|  |  |  |  |  |
| Rays | <code>{Rays[n=2]}</code> | <code>{Rays[n=3]}</code> | <code>{Rays[n=4]}</code> | <code>{Rays[n=5]}</code> |
|  |  |  |  |  |
| <code>{Rays[n=6]}</code> | <code>{Rays[n=7]}</code> | <code>{Rays[n=8]}</code> | <code>{Rays[n=9]}</code> | <code>{Rays[n=10]}</code> |

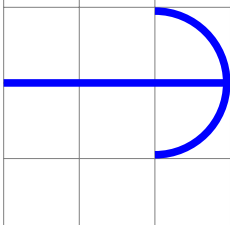
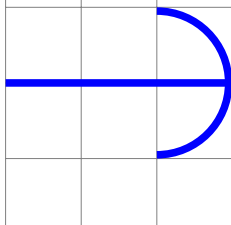
Paramètre sep PGFmanual section : 16-4-2

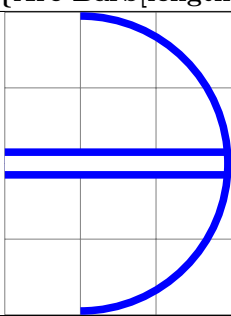
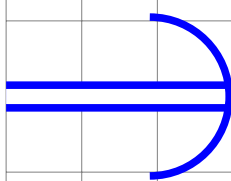
| | | | | | |
|---|---|---|---|---|---|
| <code>\tikz \draw[-{Arc Barb[sep=.25cm] Arc Barb[]},line width=.1cm,blue] (0,0) - - (1.5,1);</code> | | | | | |
|  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Classical TikZ Rightarrow | Rays |
|  |  |  |  |  |  |
| Straight Barb | Tee Barb | Circle | Ellipse | Computer Modern Rightarrow | Triangle |
|  |  |  |  |  |  |
| Latex | Kite | Rectangle | Square | Stealth | Turned Square |

| | | | | | |
|---|---|---|---|---|---|
| <code>\tikz \draw[-{Arc Barb[sep=.25cm] • Arc Barb[]},line width=.1cm,blue] (0,0) - - (1.5,1);</code> | | | | | |
|  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Classical TikZ Rightarrow | Rays |
|  |  |  |  |  |  |
| Straight Barb | Tee Barb | Circle | Ellipse | Computer Modern Rightarrow | Triangle |
|  |  |  |  |  |  |
| Latex | Kite | Rectangle | Square | Stealth | Turned Square |

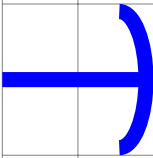
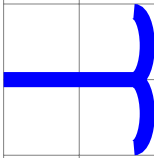
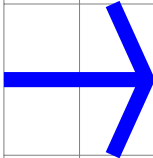
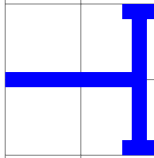
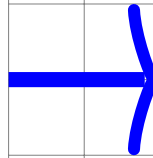
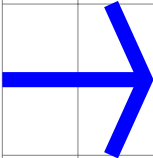
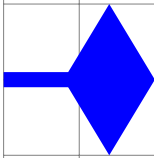
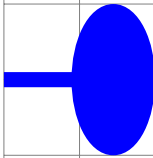
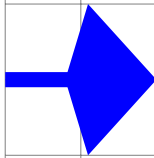
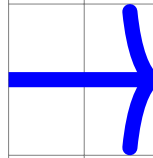
Paramètre length PGFmanual section : 16-3-1

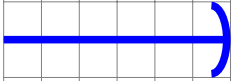
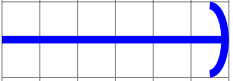
| | | | | | |
|---|---|---|---|--|---|
| \tikz \draw[-{Arc Barb[length=1cm]},line width=.2cm,blue] (0,0) - - (1,1) ; | | | | | |
|  |  |  |  |  |  |
| Arc Barb | Hooks | Straight Barb | Tee Barb | Latex | Classical TikZ Rightarrow |
|  |  |  |  |  |  |
| Straight Barb | Diamond | Ellipse | Kite | Circle | Computer Modern Rightarrow |

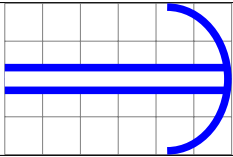
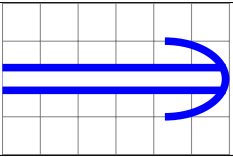
| | |
|---|---|
| \tikz \draw[-{Arc Barb[length=0cm 10]},line width=.1cm,blue] (0,0) - - (3,1) ; | |
|  |  |
| [length=0cm 10] | [length=.5cm 5] |
| 0cm + 10 x .1cm = 1cm | .5cm + 5 x .1cm = 1cm |

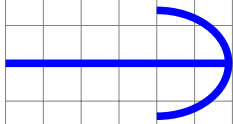
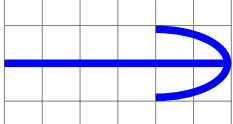
| | |
|---|---|
| \tikz \draw[-{Arc Barb[length=0cm 5]},line width=.1cm,blue,double,double distance = 2 mm] (0,0) - - (3,1) ; | |
|  |  |
| [length=0cm 5] | [length=0cm 5 .6] |
| 0cm + 5 x (.1cm + 2 mm + .1cm) = 2cm | 0cm + 5 x (.6 x .1cm + (1-.6)(.1cm + 2 mm + .1cm)) = 11 mm |

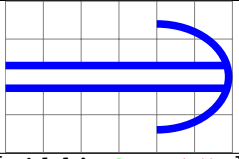
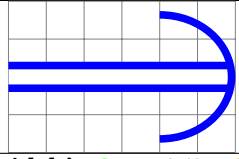
Paramètre width PGFmanual section : 16-3-1

| \tikz \draw[-{Arc Barb[width=2cm]},line width=.2cm,blue] (0,0) - - (1,1); | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| Arc Barb | Hooks | Straight Barb | Tee Barb | Classical TikZ Rightarrow |
|  |  |  |  |  |
| Straight Barb | Diamond | Ellipse | Kite | Computer Modern Rightarrow |

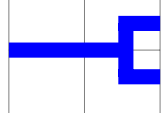
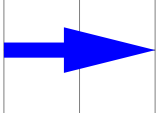
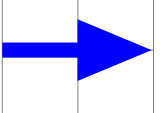
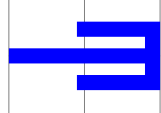
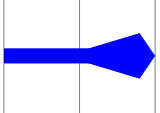
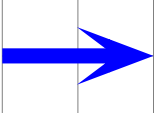
| \tikz \draw[-{Arc Barb[width=0cm 10]},line width=.1cm,blue] (0,0) - - (3,1); | |
|---|---|
|  |  |
| [width=0cm 10] | [width=.5cm 5] |
| 0cm + 10 x .1cm = 1cm | .5cm + 5 x .1cm = 1cm |

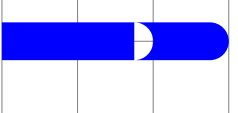
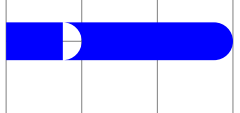
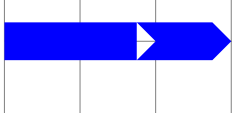
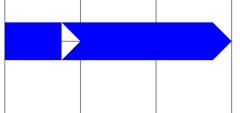
| \tikz \draw[-{Arc Barb[width=0cm 5]},line width=.1cm,blue,double,double distance = 2 mm] (0,0) - - (3,1); | |
|---|---|
|  |  |
| [width=0cm 5] | [width=0cm 5 .6] |
| 0cm + 5 x (.1cm + 2 mm + .1cm) = 2cm | 0cm + 5 x (.6 x .1cm + (1-.6)(.1cm + 2 mm + .1cm)) = 11 mm |

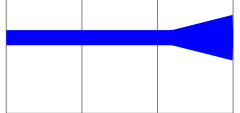
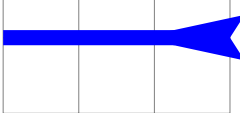
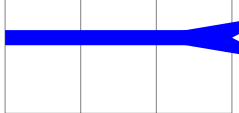
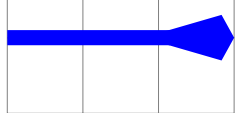
| \tikz \draw[-{Arc Barb[length=1cm,width=0cm 1.5]},line width=.1cm,blue] (0,0) - - (3,1); | |
|--|--|
|  |  |
| [width'=0cm 1.5] | [width'=.5cm .5] |
| 0cm + 1.5 x 1cm = 1.5cm | .5cm + .5 x 1cm = 1cm |

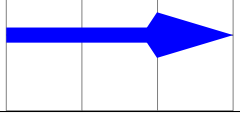
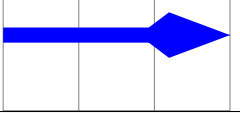
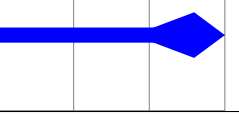
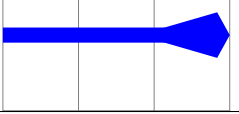
| | |
|--|---|
| <code>\tikz \draw[-{Arc Barb[length=1cm,width'=0cm 1.5]},line width=.1cm,blue,double,double distance = 2 mm]</code> | |
|  |  |
| <code>[width'=0cm 1.5]</code> | <code>[width'=0cm 1.5 .6]</code> |
| $0\text{cm} + 1.5 \times 1\text{cm} = 1.5\text{cm}$ | $0\text{cm} + 1.5 \times (.6 \times 1\text{cm} + (1-.6)(1\text{cm} + 2\text{ mm} + 1\text{cm})) = 11\text{ mm}$ |

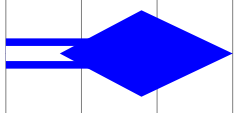
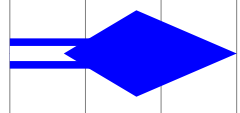
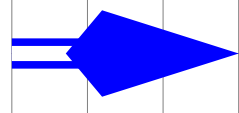
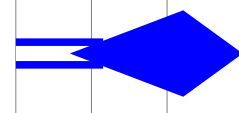
Paramètre inset [PGFmanual section : 16-3-1](#)

| | | |
|--|---|---|
| <code>\tikz \draw[-{Tee Barb[inset=0pt]},line width=.2cm,blue] (0,0) - - (1,1);</code> | | |
|  |  |  |
| Tee Barb[inset=0pt] | Kite[inset=0pt] | Stealth[inset=0pt] |
|  |  |  |
| Tee Barb[inset=1cm] | Kite[inset=1cm] | Stealth[inset=.5cm] |

| | | | |
|--|---|--|---|
| <code>\tikz \draw[-{Fast Round[inset=1cm]},line width=.2cm,blue] (0,0) - - (1,1);</code> | | | |
|  |  |  |  |
| Fast Round[inset=1cm] | Fast Round[inset=2cm] | Fast Triangle[inset=1cm] | Fast Triangle[inset=2cm] |

| | | | |
|---|---|---|---|
|  |  |  |  |
| inset=1cm 1 | inset=1cm 2 | inset=1cm 4 | inset=1cm .2 |

| | | | |
|---|---|---|--|
|  |  |  |  |
| inset=0cm 1 | inset=0cm 2 | inset=0cm 4 | inset=0cm .2 |

| | | | |
|---|---|---|---|
|  |  |  |  |
| inset=0cm .2 | inset=0cm .2 2 | inset=0cm .2 10 | inset=0cm 2 .5 |

| | | | |
|--------------|----------------|-----------------|----------------|
| | | | |
| inset=0cm .2 | inset=0cm .2 2 | inset=0cm .2 10 | inset=0cm 2 .5 |

Paramètre angle [PGFmanual section : 16-3-1](#)

| | | | | |
|--|-------------------|--------------------|-------------------|-------------------|
| \tikz \draw[-{Straight Barb[angle=60:.5cm 1]},line width=.2cm,blue] (0,0) - - (1,1); | | | | |
| | | | | |
| [angle=60:.5cm 1] | [angle=60:.5cm 1] | [angle=60:.5cm 20] | [angle=60:.5cm 5] | [angle=90:.5cm 5] |

| | | | | |
|---|-------------------|--------------------|-------------------|-------------------|
| \tikz \draw[-{Triangle[angle=60:.5cm 1]},line width=.2cm,blue] (0,0) - - (1,1); | | | | |
| | | | | |
| [angle=60:.5cm 1] | [angle=60:.5cm 1] | [angle=60:.5cm 20] | [angle=60:.5cm 5] | [angle=90:.5cm 5] |

Paramètre scale [PGFmanual section : 16-3-2](#)





















| | | |
|---|----------------|---------------|
| \tikz \draw[-{Arc Barb[scale=4]},line width=.1cm,blue] (0,0) - - (3,0); | | |
| | | |
| scale=4 | scale length=4 | scale width=4 |

Paramètre arc [PGFmanual section : 16-3-3](#)


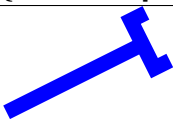

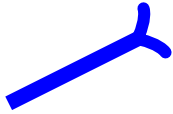
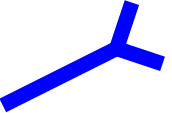
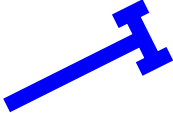


| | | | |
|---|-------------------|----------------|----------------|
| \tikz \draw[-{Arc Barb[arc=270]},line width=.2cm,blue] (0,0) - - (3,1); | | | |
| | | | |
| Arc Barb[arc=270] | Arc Barb[arc=360] | Hooks[arc=270] | Hooks[arc=360] |

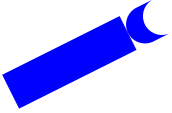
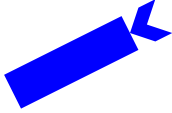


Paramètre slant [PGFmanual section : 16-3-4](#)

| | | | | |
|--|-----------|-----------|-----------|---------|
| \tikz \draw[-{Arc Barb[slant=.3]},line width=.2cm,blue] (0,0) - - (1,1); | | | | |
| | | | | |
| slant=0 | slant=0.3 | slant=0.5 | slant=0.8 | slant=1 |


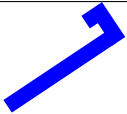





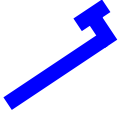



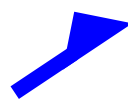

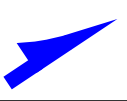
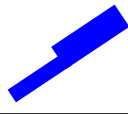
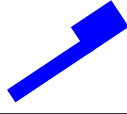


| | | | | |
|---|---|---|---|---|
| <code>\tikz \draw[-{Arc Barb[slant=.5]},line width=.2cm,blue] (0,0) - - (1,1);</code> | | | | |
|  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Classical TikZ Rightarrow |
|  |  |  |  |  |
| Straight Barb | Tee Barb | Circle | Diamond | Ellipse |
|  |  |  |  |  |
| Kite | Latex | Rectangle | Square | Stealth |
|  |  |  |  |  |
| Turned Square | Fast Round | Fast Triangle | Round Cap | Triangle Cap |

Paramètre reversed [PGFmanual section : 16-3-5](#)

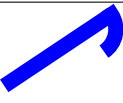

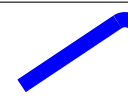
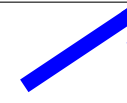
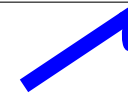
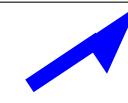
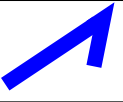
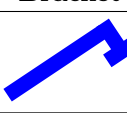
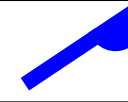
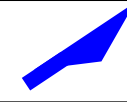
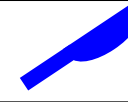
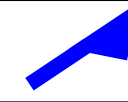


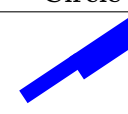



| | | | |
|---|---|---|--|
| <code>\tikz \draw[-{Arc Barb[reversed]},line width=.2cm,blue] (0,0) - - (2,1);</code> | | | |
|  |  |  |  |
| Arc Barb | Bracket | Hooks | Classical TikZ Rightarrow |
|  |  |  |  |
| Straight Barb | Tee Barb | Parenthesis | Computer Modern Rightarrow |

| | | | |
|---|---|---|--|
| <code>\tikz \draw[-{Fast Round[reversed]},line width=.5cm,blue] (0,0) - - (2,1);</code> | | | |
|  |  |  |  |
| Fast Round | Fast Triangle | Round Cap | Triangle Cap |








Paramètre left PGFmanual section : 16-3-5








| \tikz \draw[-{Arc Barb[left]},line width=.2cm,blue] (0,0) - - (1.5,1) ; | | | | | |
|---|---|---|---|--|---|
|  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Classical TikZ Rightarrow | Triangle |
|  |  |  |  |  |  |
| Straight Barb | Tee Barb | Circle | Diamond | Ellipse | Turned Square |
|  |  |  |  |  |  |
| Kite | Latex | Rectangle | Square | Stealth | Rays |

Paramètre right PGFmanual section : 16-3-5

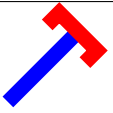
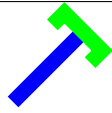
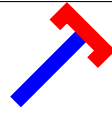
| \tikz \draw[-{Arc Barb[right]},line width=.2cm,blue] (0,0) - - (1.5,1) ; | | | | | |
|---|---|---|---|--|---|
|  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Classical TikZ Rightarrow | Triangle |
|  |  |  |  |  |  |
| Straight Barb | Tee Barb | Circle | Diamond | Ellipse | Turned Square |
|  |  |  |  |  |  |
| Kite | Latex | Rectangle | Square | Stealth | Rays |







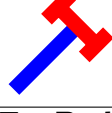
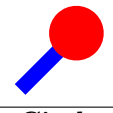
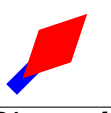
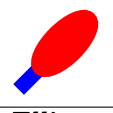


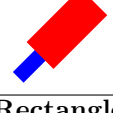
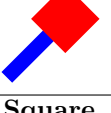


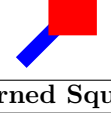
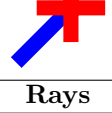
Paramètre harpoon PGFmanual section : 16-3-5

| \tikz \draw[-{Arc Barb[harpoon]},line width=.2cm,blue] (0,0) - - (1,1) ; | | | | | | |
|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Classical TikZ Rightarrow | Straight Barb | Tee Barb |


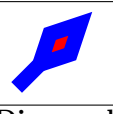
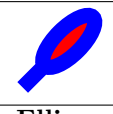
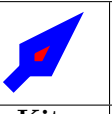
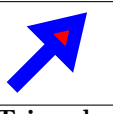

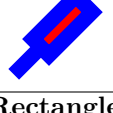
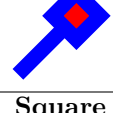

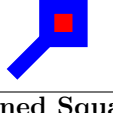
| \tikz \draw[-{Arc Barb[harpoon,swap]},line width=.2cm,blue] (0,0) - - (1,1) ; | | | | | | |
|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Classical TikZ Rightarrow | Straight Barb | Tee Barb |


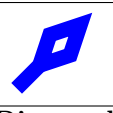

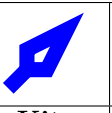
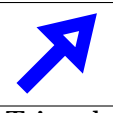


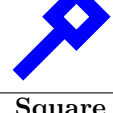


Paramètre color [PGFmanual section : 16-3-6](#)

| | | |
|---|---|---|
| \tikz \draw[-{Arc Barb[color =red],line width=.2cm,blue] (0,0) - - (1,1); | | |
|  |  |  |
| Bracket[color =red] | Bracket[color =green] | Bracket[red] |








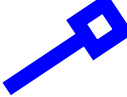


| | | | | |
|--|--|--|---|---|
| \tikz \draw[-{Arc Barb[red],line width=.2cm,blue] (0,0) - - (1,1); | | | | |
|  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Classical TikZ Rightarrow |
|  |  |  |  |  |
| Straight Barb | Tee Barb | Circle | Diamond | Ellipse |
|  |  |  |  |  |
| Kite | Latex | Rectangle | Square | Stealth |
|  |  |  | | |
| Triangle | Turned Square | Rays | | |

Paramètre fill [PGFmanual section : 16-3-6](#)

















| | | | | |
|---|---|---|---|---|
| \tikz \draw[-{Circle[fill =red],line width=.2cm,blue] (0,0) - - (1,1); | | | | |
|  |  |  |  |  |
| Circle | Diamond | Ellipse | Kite | Triangle |
|  |  |  |  |  |
| Latex | Rectangle | Square | Stealth | Turned Square |

















| | | | | |
|---|---|---|---|---|
| \tikz \draw[-{Circle[fill =none],line width=.2cm,blue] (0,0) - - (1,1); | | | | |
|  |  |  |  |  |
| Circle | Diamond | Ellipse | Kite | Triangle |
|  |  |  |  |  |
| Latex | Rectangle | Square | Stealth | Turned Square |

Paramètre open PGFmanual section : 16-3-6

















| | | | | |
|---|---|---|---|---|
| \tikz \draw[-{Circle[open]},line width=.2cm,blue] (0,0) - - (1.5,1); | | | | |
|  |  |  |  |  |
| Circle | Diamond | Ellipse | Kite | Triangle |
|  |  |  |  |  |
| Latex | Rectangle | Square | Stealth | Turned Square |

















Paramètre line cap : round or butt PGFmanual section : 16-3-7

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| \tikz \draw[-{Arc Barb[line cap=butt]},line width=.2cm,blue] (0,0) - - (1,1); | | | | | | | |
|  |  |  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Ellipse | Rectangle | Square | Stealth |
|  |  |  |  |  |  |  |  |
| Straight Barb | Tee Barb | Diamond | Kite | Latex | Triangle | Turned Square | Rays |

















| | | | | | | | |
|---|---|---|---|---|---|---|---|
| \tikz \draw[-{Arc Barb[line cap=round]},line width=.2cm,blue] (0,0) - - (1,1); | | | | | | | |
|  |  |  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Ellipse | Rectangle | Square | Stealth |
|  |  |  |  |  |  |  |  |
| Straight Barb | Tee Barb | Diamond | Kite | Latex | Triangle | Turned Square | Rays |

Paramètre line join : round or miter PGFmanual section : 16-3-7





| | | | | | | | |
|---|---|---|---|---|---|---|---|
| \tikz \draw[-{Arc Barb[line join=miter]},line width=.2cm,blue] (0,0) - - (1,1); | | | | | | | |
|  |  |  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Ellipse | Rectangle | Square | Stealth |
|  |  |  |  |  |  |  |  |
| Straight Barb | Tee Barb | Diamond | Kite | Latex | Triangle | Turned Square | Rays |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| \tikz \draw[-{Arc Barb[line cap=round]},line width=.2cm,blue] (0,0) - - (1,1) ; | | | | | | | |
|  |  |  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Ellipse | Rectangle | Square | Stealth |
|  |  |  |  |  |  |  |  |
| Straight Barb | Tee Barb | Diamond | Kite | Latex | Triangle | Turned Square | Rays |

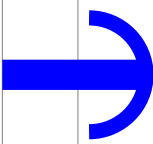
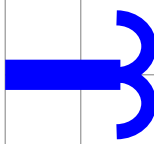
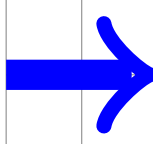
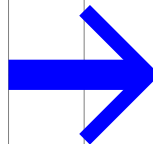
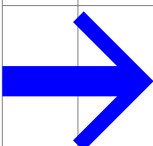
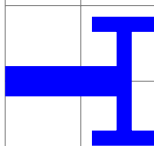
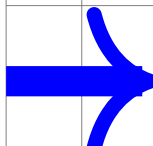
Paramètre round PGFmanual section : 16-3-7

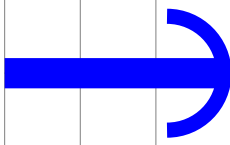
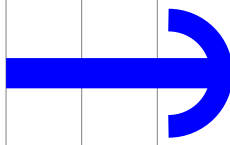
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| \tikz \draw[-{Arc Barb[round]},line width=.2cm,blue] (0,0) - - (1,1) ; | | | | | | | |
|  |  |  |  |  |  |  |  |
| Arc Barb | Bracket | Hooks | Parenthesis | Ellipse | Rectangle | Square | Stealth |
|  |  |  |  |  |  |  |  |
| Straight Barb | Tee Barb | Diamond | Kite | Latex | Triangle | Turned Square | Rays |

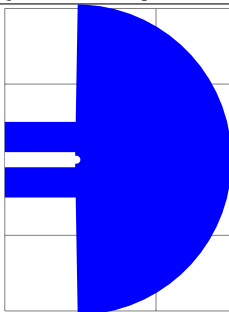
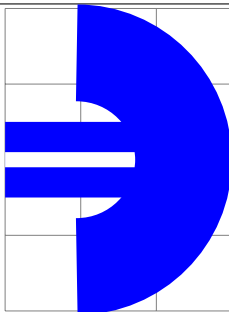
Paramètre sharp PGFmanual section : 16-3-7

| | | | |
|--|---|---|---|
| \tikz \draw[-{Classical TikZ Rightarrow[sharp]},line width=.2cm,blue] (0,0) - - (2,0) ; | | | |
| -{Classical TikZ Rightarrow[sharp]} | | -{Computer Modern Rightarrow[sharp]} | |
|  |  |  |  |
| sharp | [] | sharp | [] |

Paramètre line width PGFmanual section : 16-3-7

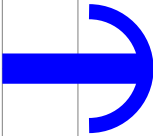
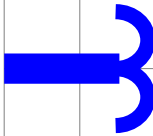
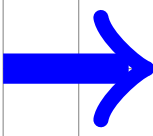
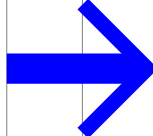
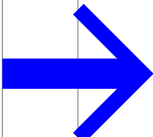
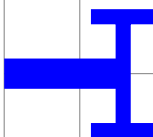
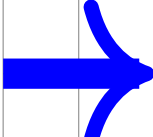
| | | | |
|--|---|---|---|
| <code>\tikz \draw[-{Arc Barb[line width=.2cm]},line width=.4cm,blue] (0,0) - - (2,0);</code> | | | |
|  |  |  |  |
| Arc Barb | Hooks | Classical TikZ Rightarrow | Straight Barb |
|  |  |  | |
| Straight Barb | Tee Bar | Computer Modern Rightarrow | |

| | |
|--|--|
| <code>\tikz \draw[-{Arc Barb[line width=0cm 10]},line width=.1cm,blue] (0,0) - - (3,1);</code> | |
|  |  |
| <code>[length=0cm 10]</code> | <code>[length=.5cm 5]</code> |
| <code>0cm + 10 x .1cm = 1cm</code> | <code>.5cm + 5 x .1cm = 1cm</code> |

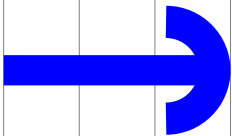
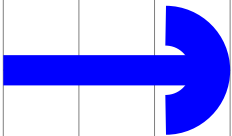
| | |
|---|---|
| <code>\tikz \draw[-{Arc Barb[length=0cm 5]},line width=.1cm,blue,double,double distance = 2 mm] (0,0) - - (3,1);</code> | |
|  |  |
| <code>[length=0cm 5]</code> | <code>[length=0cm 5 .6]</code> |
| <code>0cm + 5 x (.1cm + 2 mm + .1cm) = 2cm</code> | <code>0cm + 5 x (.6 x .1cm + (1-.6)(.1cm + 2 mm + .1cm)) = 11 mm</code> |

Paramètre line width' PGFmanual section : 16-3-7

```
\tikz \draw[-{Arc Barb[line width'=.2cm]},line width=.4cm,blue] (0,0) - - (1,1);
```

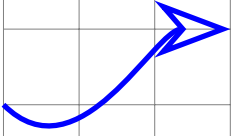
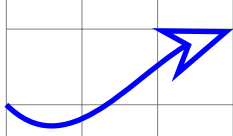
| | | | |
|---|---|---|---|
|  |  |  |  |
| Arc Barb | Hooks | Classical TikZ Rightarrow | Straight Barb |
|  |  |  | |
| Straight Barb | Tee Bar | Computer Modern Rightarrow | |

```
\tikz \draw[-{Arc Barb[line width=0cm 10]},line width'=.1cm,blue] (0,0) - - (3,1);
```

| | |
|---|---|
|  |  |
| [length=0cm 10] | [length=.5cm 5] |
| 0cm + 10 x .1cm = 1cm | .5cm + 5 x .1cm = 1cm |

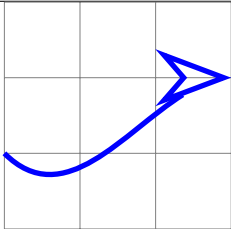
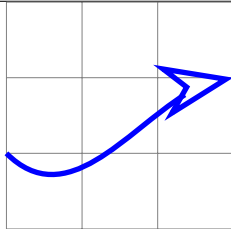
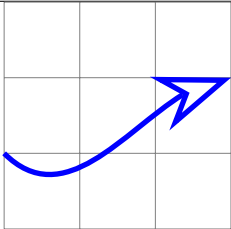
Paramètre quick PGFmanual section : 16-3-8

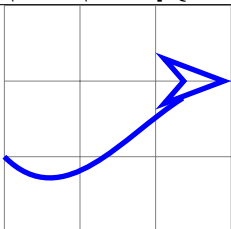
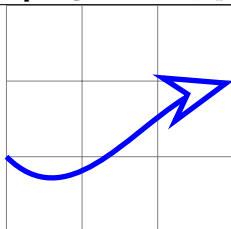
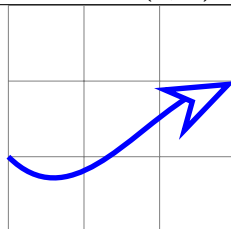
```
\tikz \draw[-{Stealth[length=1cm,open,quick]}] (0,0) .. controls (1,-1) and (2,1) .. (3,1);
```

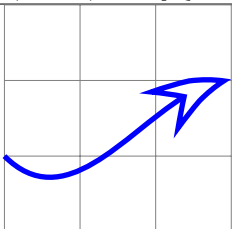
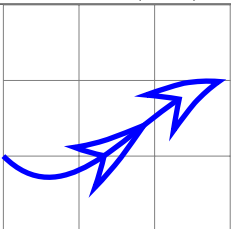
| | |
|---|--|
|  |  |
| [-Stealth[length=1cm,open,quick]] | [-Stealth[length=1cm,open]] |

Paramètre bending PGFmanual section : 16-3-8

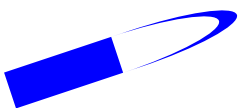


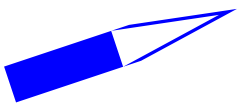

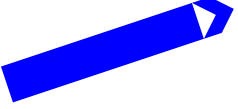
Charger l'extension : `\usetikzlibrary{bending}`

| | | |
|---|---|--|
| <code>\tikz \draw[-{Stealth[length=1cm,open,flex=0]}] (0,0) .. controls (1,-1) and (2,1) .. (3,1);</code> | | |
|  |  |  |
| flex=0 | flex=0.5 | flex=1 |

| | | |
|--|---|--|
| <code>\tikz \draw[-{Stealth[length=1cm,open,flex'=0]}] (0,0) .. controls (1,-1) and (2,1) .. (3,1);</code> | | |
|  |  |  |
| flex'=0 | flex'=0.5 | flex'=1 |

| | |
|---|--|
| <code>\tikz \draw[-{Stealth[length=1cm,open,bend]}] (0,0) .. controls (1,-1) and (2,1) .. (3,1);</code> | |
|  |  |
| <code>[-{Stealth[length=1cm,open,bend]}]</code> | <code>[-Stealth[length=1cm,open,bend]Stealth[length=1cm,open,bend,sep]]</code> |

Paramètre cap angle PGFmanual section : 16-5-4


| | | |
|---|---|---|
| <code>\tikz \draw[-{Fast Round[cap angle=60]},line width=.2cm,blue] (0,0) - - (3,1);</code> | | |
|  |  |  |
| Fast Round[cap angle=20] | Fast Round[cap angle=60] | Fast Round[cap angle=90] |
|  |  |  |
| Fast Triangle[cap angle=20] | Fast Triangle[cap angle=60] | Fast Triangle[cap angle=90] |

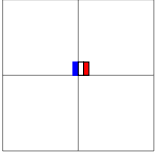
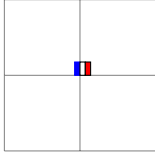
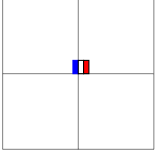
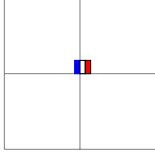
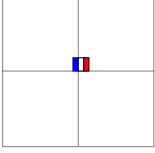
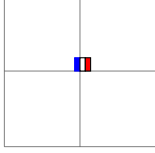
5 Insertion de petites images

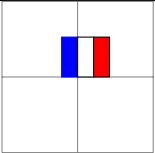
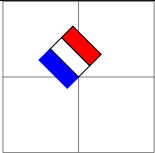
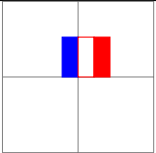
5.1 Images créées



PGFmanual section : 14-19



PGFmanual section : 18






| Création | Utilisation |
|---|--|
| <pre>\tikzset{\dfr/.pic={\filldraw[blue] (-2pt,0) rectangle (0,5pt); \filldraw[fill=white] (0,0) rectangle (2pt,5pt); \filldraw[fill=red] (2pt,0) rectangle (4pt,5pt); }}</pre> | <pre>\tikz \pic {dfr};</pre>  |


| placement à une position | |
|---|---|
|  |  |
| <code>\pic at (1,1) [pic type = dfr];</code> | <code>\pic at (1,1) {dfr};</code> |
|  |  |
| <code>\path (1,1) pic [pic type= dfr];</code> | <code>\path (1,1) pic {dfr};</code> |
|  |  |
| <code>\pic [at={(1,1)}] [pic type= dfr];</code> | <code>\pic [at={(1,1)}] {dfr};</code> |


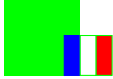
| \pic[scale=3] at (1,1) {dfr}; | | |
|---|---|---|
|  |  |  |
| <code>[scale=3]</code> | <code>[scale=3,rotate=45]</code> | <code>[scale=3,red]</code> |

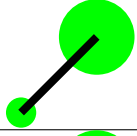
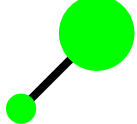
| | |
|--|---|
| <pre>\tikz [scale=4] \pic at (0,0) {dfr}; \pic at (.5,0) [transform shape] {dfr};</pre> |   |
|--|---|

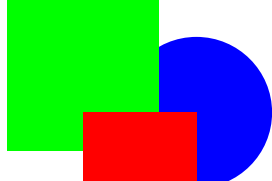
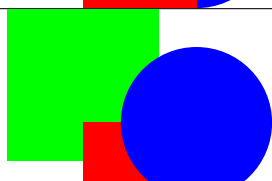
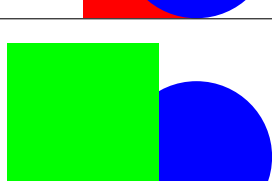
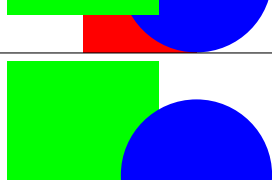
| Placement sur un chemin |
|---|
| <pre>\tikz \draw (0,0) to [out=10,in=170] pic [near start] {dfr} pic {dfr} pic [sloped, near end] {dfr} (10,0);</pre> |
|  |
| <pre>\draw (0,0) to [out=10,in=170] pic [pos=.3] {code={\draw circle [radius=3mm];}} (10,0);</pre> |
|  |

| | | | | |
|---|---|---|---|---|
| Définition : | | | | |
| <pre>\tikzset{ my pic/.pic = { \path [pic actions] (0,0) circle[radius=3mm]; \draw (-3mm,-3mm) rectangle (3mm,3mm); } }</pre> | | | | |
| Utilisation : <code>\pic [red] {my pic}</code> | | | | |
|  |  |  |  |  |
| [red] | [draw] | [draw=red] | [draw, shading=ball] | [fill=red !50] |

| |
|---|
| <code>\tikz \pic foreach \x in {1,1.5,...,10} at (\x,0) {dfr};</code> |
|  |

| | |
|--|---|
| <code>\fill [green] (0,0) - - (1,0)pic [behind path,scale=3] {dfr} - (1,1) - (0,1) - cycle;</code> | |
|  |  |
| [behind path,scale=3] | [scale=3] |

| | |
|---|---|
| <pre>\tikzset{ pics/mon cercle/.style = { background code = { \fill circle [radius=#1]; } } } \tikz [fill=green] \draw[line width=3pt] (0,0) pic {mon cercle=2mm} - - (1,1) pic {mon cercle=5mm};</pre> |  |
| <pre>\tikzset{ pics/mon cercle/.style = { foreground code = { \fill circle [radius=#1]; } } } \tikz [fill=green] \draw[line width=3pt] (0,0) pic {mon cercle=2mm} - - (1,1) pic {mon cercle=5mm};</pre> |  |

| | |
|---|---|
| <pre>\fill [green](-1,0) - - (1,0) pic [pics/background code={\fill[blue] (0.5,0.5) circle (1cm)}; , pics/code=\fill[red] (-1,-.5) rectangle (0.5,0.5);] {} - - (1,2) - - (-1,2) - - cycle;</pre> |  |
| <pre>\fill [green] (-1,0) - - (1,0) pic [pics/foreground code=\fill[blue] (0.5,0.5) circle (1cm)]; ,pics/code={\fill[red] (-1,-.5) rectangle (0.5,0.5); }] {} - - (1,2) - - (-1,2) - - cycle;</pre> |  |
| <pre>\fill [green](-1,0) - - (1,0) pic [pics/background code={\fill[blue] (0.5 , 0.5) circle (1cm)}; ,pics/code={\fill[red] (-1 , -0.5) rectangle (0.5 , 0.5);},behind path] {} - - (1,2) - - (-1,2) - - cycle;</pre> |  |
| <pre>\fill [green] (-1,0) - - (1,0) pic [pics/foreground code={\fill[blue] (0.5 , 0.5) circle (1cm)}; , pics/code={\fill[red] (-1,-.5) rectangle (0.5 , 0.5);},behind path] {} - - (1,2) - - (-1,2) - - cycle;</pre> |  |

5.2 Images prédéfinies : Marquage des angles

PGFmanual section : 39

Charger l'extension : `\usetikzlibrary{angles}`

| | |
|--|---------------------------------|
| <code>\tikz \draw (2,0) coordinate (A) - - (0,0) coordinate (B)</code> <code>- - (1,1) coordinate (C) pic [draw] {angle};</code> | |
| | |
| <code>pic [draw] {angle}</code> | <code>pic [fill] {angle}</code> |

| | |
|---|---|
| <code>\tikz \draw (2,0) coordinate (X) - - (0,0) coordinate (Y)</code> <code>- - (1,1) coordinate (Z) pic [draw] {angle= X- -Y- -Z};</code> | |
| | |
| <code>pic [draw] {angle= X- -Y- -Z}</code> | <code>pic [fill] {angle = Z- -Y- -X}</code> |
| Par défaut : : <code>angle= A- -B- -C</code> | |

| | |
|---|---|
| <code>\tikz \draw (2,0) coordinate (A) - - (0,0) coordinate (B)</code> <code>- - (1,1) coordinate (C) pic [draw,->] {angle};</code> | |
| | |
| <code>pic [draw,->] {angle}</code> | <code>pic [fill,fill=red!50] {angle}</code> |

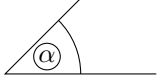
| | |
|---|--|
| <code>\tikz \draw (2,0) coordinate (A) - - (0,0) coordinate (B)</code> <code>- - (1,1) coordinate (C) pic [draw,angle radius=1cm] {angle};</code> | |
| | |
| <code>pic [draw,angle radius=1cm] {angle}</code> | <code>pic [fill,angle radius=1cm] {angle}</code> |
| Par défaut : : <code>angle radius=5mm</code> | |

Charger l'extension : `\usetikzlibrary{quotes}`

| | |
|--|--|
| <code>\tikz \draw (3,0) coordinate (A) - - (0,1) coordinate (B) - - (1,2) coordinate (C)</code> <code>pic [draw,"\$\alpha\$ "] {angle};</code> | |
| | |

| |
|--|
| <code>\tikz \draw (2,0) coordinate (A)</code> <code>- - (0,0) coordinate (B) - - (1,2) coordinate (C)</code> <code>pic [draw, " \$\alpha\$", angle eccentricity=1] {angle};</code> |
|--|

| | |
|---|-------------------------------------|
| | |
| <code>angle eccentricity=1</code> | <code>angle eccentricity=1.5</code> |
| Par défaut : : <code>angle eccentricity= 0.6</code> | |

| |
|---|
| <pre> \tikz { \draw (2,0) coordinate (A) - - (0,0) coordinate (B) - - (1,2) coordinate (C) pic (xxx) [draw,"\$\alpha\$",angle radius= 1cm] {angle}; \draw (xxx)circle [radius=5pt]; } </pre> |
|  |

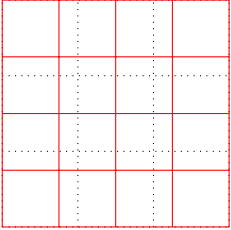
6 Les coordonnées

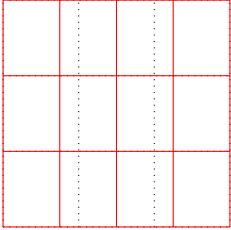
6.1 Quadrillage

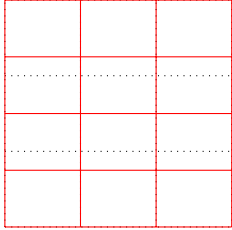
`\draw (0,0) grid (2,2);`

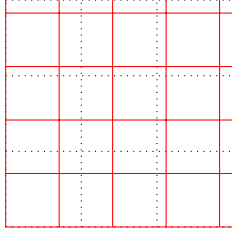
PGFmanual section : 14-8

`\draw (0,0) grid [step=.75cm] (0,0) grid (3,3);`









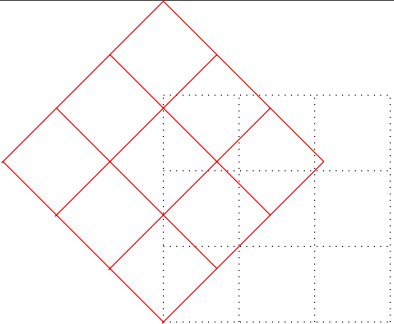
step=.75cm

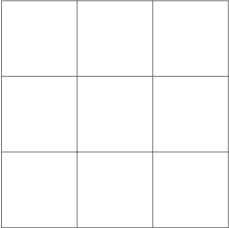
x step=.75cm

ystep=.75cm

step=(45:1)

`\draw[red] (0,0) grid [rotate=45] (3,3);``\draw[help lines] (0,0) grid (3,3);`

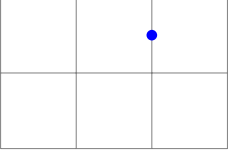
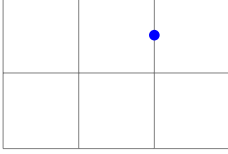




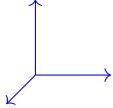
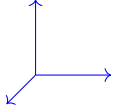
6.2 Coordonnées

PGFmanual section : 13-2-1

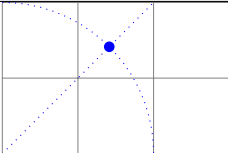
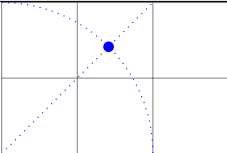
6.2.1 Système de coordonnées « canvas »

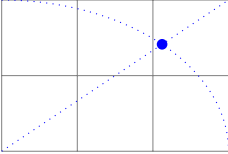
| Explicite | Implicite |
|---|--|
|  |  |
| <code>\fill (canvas cs:x=2cm,y=1.5cm) circle (2pt);</code> | <code>\fill (2cm,1.5cm) circle (2pt);</code> |

6.2.2 Système de coordonnées xyz

| | |
|---|---|
|  |  |
| <code>\draw (0,0) - - (xyz cs:x=1);</code> | <code>\draw (0,0) - - (1,0,0);</code> |
| <code>\draw (0,0) - - (xyz cs:y=1);</code> | <code>\draw (0,0) - - (0,1,0);</code> |
| <code>\draw (0,0) - - (xyz cs:z=1);</code> | <code>\draw (0,0) - - (0,0,1);</code> |

6.2.3 Système de coordonnées polaire « canvas »

| Explicite | Implicite |
|---|---|
|  |  |
| <code>\fill (canvas polar cs :angle=45,radius=2cm) circle (2pt);</code> | <code>\fill (45:2cm) circle (2pt);</code> |

| |
|---|
|  |
| <code>\fill (canvas polar cs:angle=45,x radius=3cm,y radius=2cm) circle (2pt);</code> |

6.2.4 Coordinate system xyz polar

| Explicite | Implicite |
|---|--|
| | |
| <code>\fill (xyz polar cs :angle=45,radius=2) circle (2pt) ;</code> | <code>\fill (45:2cm) circle (2pt) ;</code> |
| | |
| <code>\fill (xyz polar cs:angle=45,x radius=3,y radius=2) circle (2pt) ;</code> | |
| <code>\begin{tikzpicture}[x=1.5cm,y=1cm]</code> | |
| | |
| <code>\fill (xyz polar cs :angle=45,radius=2) circle (2pt) ;</code> | <code>\fill (45:2cm) circle (2pt) ;</code> |
| <code>\begin{tikzpicture}[x={{(0cm,1cm)}},y={{(-1cm,0cm)}}]</code> | |
| | |
| <code>\fill (xyz polar cs :angle=45,radius=2) circle (2pt) ;</code> | <code>\fill (45:2cm) circle (2pt) ;</code> |

6.2.5 Coordonnées barycentriques

[PGFmanual section : 13-2-2](#)

| | | |
|--|------------------|-----------------------|
| <code>\node [circle,fill=red!20] at (barycentric cs:A=0.6,B=0.3) {X} ;</code> | | |
| | | |
| A=0.3,B=0.3 | A=0.4,B=0.4,C=.4 | A=0.5,B=0.5,C=.5,D=.5 |
| | | |
| A=0.6,B=0.3 | A=0.2,B=0.4,C=.6 | A=0.2,B=0.4,C=.6,D=.8 |

6.2.6 Coordonnées nominatives : nœud

[PGFmanual section : 13-2-3](#)

| | |
|--|--|
| | <pre>\coordinate (centre) at(1.5,1.5); \coordinate (A) at (.5,.5); \coordinate (B) at (2.5,2.5); \fill (centre) circle (3pt); \draw[red] (A) rectangle (B);</pre> |
|--|--|

voir aussi page 94

6.2.7 Coordonnées relatives à un nœud

| | | | |
|---|--------------------|---------------------|--------------------|
| <pre>\node [draw,fill=green!20,] (A) at (1,1) {\huge nœud}; \fill[red] (node cs :name=A,anchor=south) circle (3pt);</pre> | | | |
| | | | |
| name=A,anchor=south | name=A,anchor=west | name=A,anchor=north | name=A,anchor=east |

| | | | |
|---|------------------|------------------|-------------------|
| <pre>\fill[red] (node cs :name=A,angle=0) circle (3pt);</pre> | | | |
| | | | |
| name=A,angle=0 | name=A,angle=-30 | name=A,angle=-90 | name=A,angle=-150 |

6.2.8 Coordonnées relatives à deux points

[PGFmanual section : 13-3-1](#)

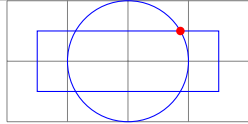
| | |
|---|-----------------|
| <pre>\node [circle,fill=red!20] at (1,1 - 3,3) {X}</pre> | |
| | |
| at (1,1 - 3,3) | at (1,1 - 3,3) |

6.2.9 Coordonnée relative à une intersection

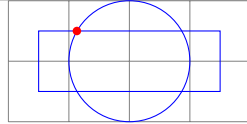
PGFmanual section : 13-3-2

Charger l'extension : `\usetikzlibrary{intersections}`

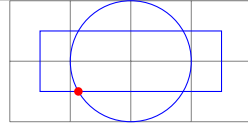
```
\draw [name path=cercle] (2,1) circle (1cm);
\draw [name path=rectangle] (0.5,0.5) rectangle +(3,1);
\fill [red,name intersections={of=cercle and rectangle}] (intersection-1) circle (2pt)
```



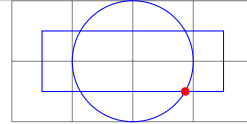
intersection-1



intersection-2

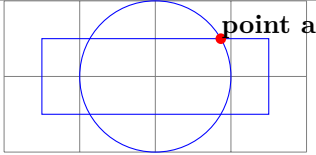


intersection-3

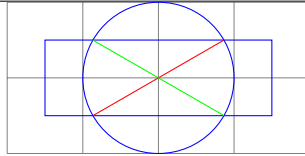


intersection-4

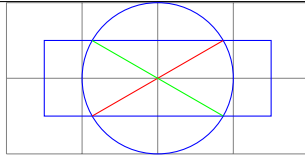
```
\fill [red, name intersections={of=cercle and rectangle}]
(intersection-1) circle (2pt) node[black,above right] {point a};
```



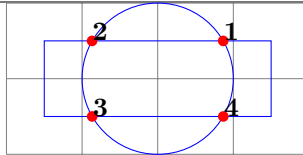
```
\fill [red, name intersections={of=cercle and rectangle, name=point}];
\draw [red] (point-1) - - (point-3); \draw [green] (point-2) - - (point-4);
```



```
\fill [red, name intersections={of=cercle and rectangle, by={a,b,c,d}}];
\draw [red] (a) - - (c); \draw [green] (b) - - (d);
```



```
\fill [name intersections={of=cercle and rectangle, name=i, total=\t}] [red]
\foreach \s in {1,...,\t} {(i-\s) circle (2pt) node[black,above right] {\s}}
```

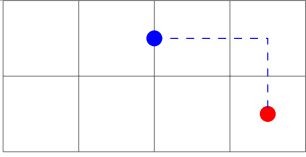


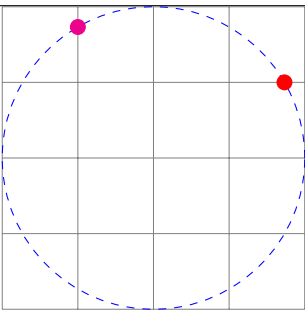
6.3 Position calculée

6.3.1 Position calculée avec le module « pgfmath »

[PGFmanual section : 13-2-1](#)

Ce module est chargé automatiquement avec le module Tikz

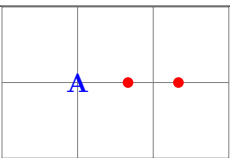
| |
|---|
|  |
| <i>Explicite</i> : <code>\fill [red] (canvas cs:x=2cm+1.5cm,y=1.5cm-1cm) circle (3pt) ;</code> |
| <i>Implicite</i> : <code>\fill [red] (2cm+1.5cm,1.5cm-1cm) circle (3pt) ;</code> |

| | |
|---|--|
|  | <pre>\draw[dashed] (2,2) circle (2) ; \fill [red](2+ 2*cos 30 , 2+2*sin 30) circle (3pt) ; \fill[magenta] (2+2*cos{(120)} , 2+2*sin{(120)}) circle (3pt) ;</pre> |
|---|--|

6.4 Position calculée avec « library calc »

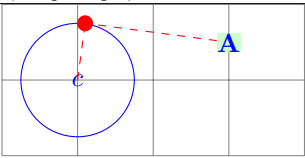
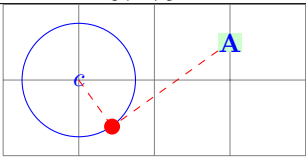
[PGFmanual section : 13-5](#)

Charger l'extension : `\usetikzlibrary{calc}`

| | |
|---|---|
|  | <pre>\node (a) at (1,1) {A} ; \fill [red] (\$ (a) + 2/3*(1cm,0)\$) circle (2pt) ; \fill [red] (\$ (a) + 4/3*(1cm,0)\$) circle (2pt) ;</pre> |
|---|---|

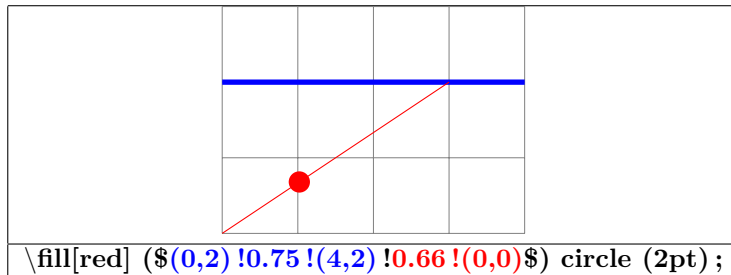
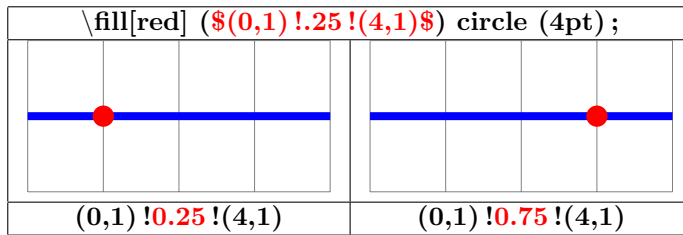
6.5 Tangentes avec « library calc »

[PGFmanual section : 13-2-4](#)

| | |
|---|---|
| <pre>\node[fill=green!20] (a) at (3,1.5) {A} ; \fill[red] (tangent cs :node=c,point={ (A)},solution=1) ;</pre> | |
|  |  |
| solution=1 | solution=2 |

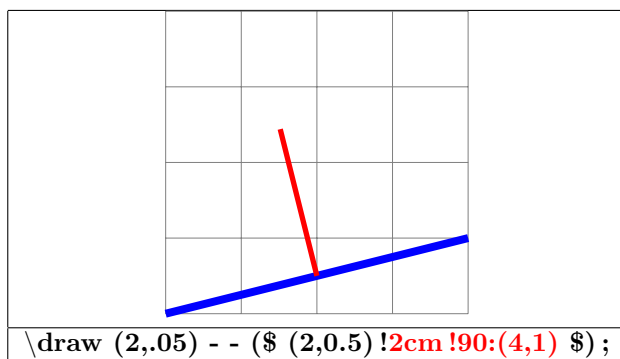
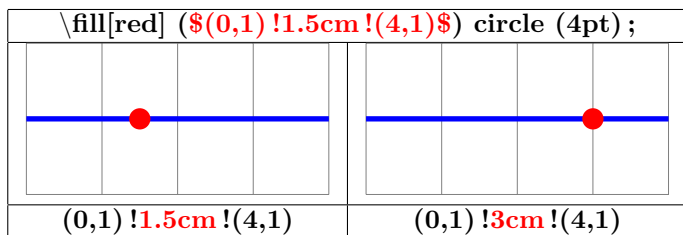
6.5.1 Point à pourcentage donné

PGFmanual section : 13-5-3



6.5.2 Point à distance donnée

PGFmanual section : 13-5-4



6.5.3 Coordonnées relatives

6.5.4 Cartésienne

PGFmanual section : 13-4-1

| relative à l'origine | relative à une position | relative à la dernière position |
|---|---|---|
| | | |
| <code>(0,0) - - (1,0)</code> <code>- - (2,1) - - (2,-1)</code> | <code>(0,0) - - (1,0)</code> <code>- - +(2,1) - - +(2,-1)</code> | <code>(0,0) - - (1,0)</code> <code>- - ++(2,1) - - ++(2,-1)</code> |

| | | |
|---|---|---|
| | | |
| <code>\draw (0,0) rectangle (1,1)</code> <code>rectangle (2,2) rectangle (3,3);</code> | <code>\draw (0,0) rectangle (1,1)</code> <code>rectangle +(2,2) rectangle +(3,3);</code> | <code>\draw (0,0) rectangle (1,1)</code> <code>rectangle ++(2,2) rectangle ++(3,3);</code> |

6.5.5 Polaire

| relative à l'origine | relative à une position | relative à la dernière position |
|---|---|--|
| | | |
| <code>(0:0) - - (0:1)</code> <code>- - (30:2) - - (-30:2)</code> | <code>(0:0) - - (0:1)</code> <code>- - +(30:2) - - +(-30:2)</code> | <code>(0:0)- - (0:1)</code> <code>- - ++(30:2) - - ++(-30:2)</code> |

6.5.6 coordonnée relative en polaire

[PGFmanual section : 13-4-2](#)

| | |
|------------------------------|-----------------------------|
| | |
| <code>([turn]-45:1cm)</code> | <code>([turn]45:1cm)</code> |

| | |
|--|--|
| | |
| <code>\draw (4,0) arc (0:120:2) - - ([turn]90:2cm);</code> | <code>\draw (0,0) to [bend left] (2,2) - - ([turn]0:2cm);</code> |

| \draw(1,2) .. controls ([turn]0:2cm) .. ([turn]-90:2cm); | | |
|--|-----------------------------------|---------------------------------|
| | | |
| ([turn]0:2cm) .. ([turn]-90:2cm) | ([turn]30:2cm) .. ([turn]-90:2cm) | ([turn]0:2cm) .. ([turn]90:2cm) |

7 Les nœuds

7.1 Définition des nœuds

| \draw (1,1) node[fill=red !20] {}; | | | |
|------------------------------------|------------|-----------|----------------|
| | | | |
| Par défaut : | node[draw] | node[red] | node[red,draw] |

| \node at (1,1) [fill=red !20] {}; | | | |
|-----------------------------------|--------|--------------------|------------|
| | | | |
| [fill=red !20] | [draw] | [red,fill=red !20] | [red,draw] |

Autres types de nœuds voir page 79

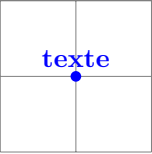
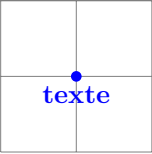
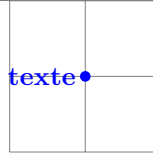
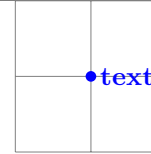
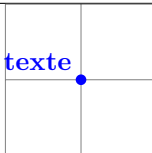
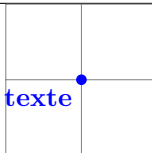
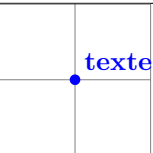
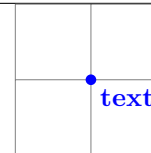
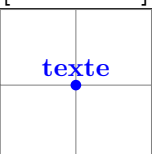
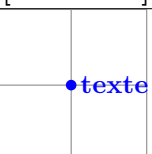
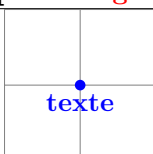
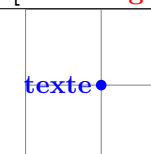
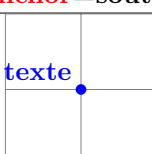
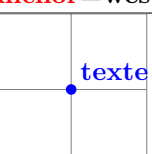
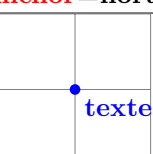
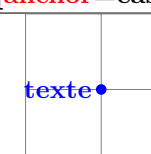
7.2 Liaisons

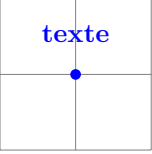
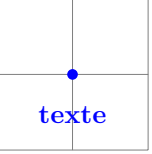
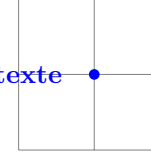
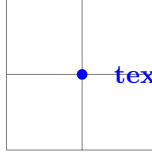
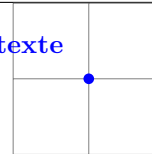
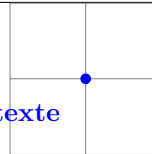
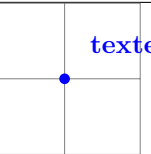
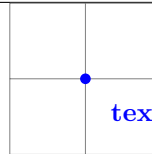
| | | |
|----------------------------|---------------------------|---------------------------|
| | | |
| (A) -- (B) | (A) - (B) | (A) - (B) |
| | | |
| (A) to [bend right] (B) | (A) to [bend left] (B) | (A) to [bend left=0] (B) |
| | | |
| (A) to [bend left=120] (B) | (A) to [bend left=45] (B) | (A) to [bend left=90] (B) |
| | | |
| (A) to [out=90] (B) | (A) to [out=30] (B) | (A) to [in=-90] (B) |

| | |
|---|--|
| <code>\draw (A) .. controls +(right:2cm) and +(down:2cm) .. (B);</code> | |
| | |
| <code>controls +(right:2cm) and +(down:2cm)</code> | <code>controls +(up:1cm) and +(left:1cm)</code> |
| | |
| <code>controls +(right:1cm) and +(right:2cm)</code> | <code>controls +(up:1cm) and +(right:2cm)</code> |
| | |
| <code>controls +(120:2cm) and +(200:1cm)</code> | <code>controls +(120:2cm) and +(200:1cm)</code> |
| | |
| <code>controls +(C) and +(D)</code> | <code>controls +(D)</code> |

| | | |
|--|--------------------|-----------------------|
| <code>\node[draw] (A) at (0,0) {A}</code> <code>\node[draw] (B) at (2,2) {B} edge [->] (A);</code> PGFmanual section : 17-12-1 | | |
| | | |
| <code>[->]</code> | <code>[red]</code> | <code>[dashed]</code> |

7.3 Étiquettes sur les nœuds

| \fill(0,0) circle (2pt) node[above]{texte}; | | | |
|--|--|--|--|
|  |  |  |  |
| [above] | [below] | [left] | [right] |
|  |  |  |  |
| [above left] | [below left] | [above right] | [below right] |
|  |  |  |  |
| [anchor=south] | [anchor=west] | [anchor=north] | [anchor=east] |
|  |  |  |  |
| [anchor=south east] | [anchor=south west] | [anchor=north west] | [anchor=north east] |

| \fill(0,0) circle (2pt) node[above=.3cm]{texte}; | | | |
|---|---|---|--|
|  |  |  |  |
| [above=.3cm] | [below=.3cm] | [left=.3cm] | [right=.3cm] |
|  |  |  |  |
| [above left=.3cm] | [below left=.3cm] | [above right=.3cm] | [below right=.3cm] |

| | | | | |
|--|-----------------|--------------------|--------------------|-----------------|
| $\backslash\text{shorthandoff}\{:\}$ ¹ $\backslash\text{node}[\text{draw},\text{label}=\text{right:texte}]\{\}$ $\backslash\text{shorthandon}\{:\}$ | | | | |
| \square texte | texte \square | texte \square | \square texte | \square texte |
| label=right | label=left | label=above | label=below | label=45 |

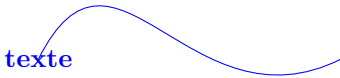
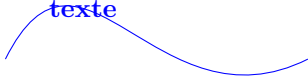
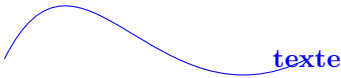
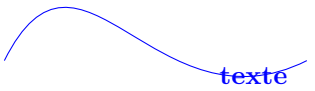
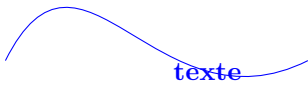

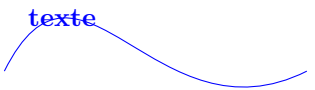
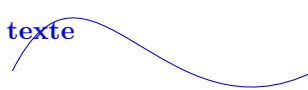
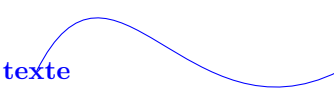
| |
|---|
| $\backslash\text{fill}(0,0)$ circle (2pt) node[below right=.3cm,draw,label=45:étiquette] {texte}; |
| |




| | | |
|--|-----------------------|--------------------------|
| $\backslash\text{shorthandoff}\{:\}$ $\backslash\text{node}[\text{circle},\text{draw},\text{blue},\text{pin}=\text{texte}]\{\}$; $\backslash\text{shorthandon}\{:\}$ ¹ | | |
| | | |
| [circle,pin=texte] | [circle,pin=60:texte] | [circle,pin=right:texte] |




| | | |
|--|---------------------|---------------------|
| $\backslash\text{tikz}[\text{pin position}=60]$ $\backslash\text{node}[\text{circle},\text{pin}=\text{texte}]\{\}$; | | |
| | | |
| [pin position=60] | [pin distance=0 cm] | [pin distance=2 cm] |
| Par défaut : : above | Par défaut : : 3 ex | |

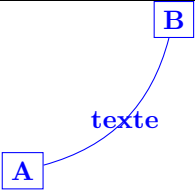
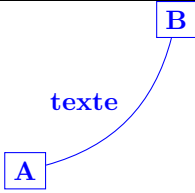
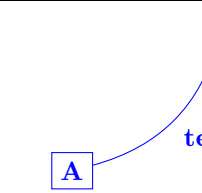
¹désactivation et ré-activation de « : »conflit entre les modules Tikz et Babel en français

7.4 Nœuds sur un chemin

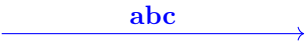



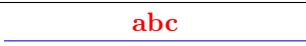
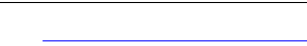
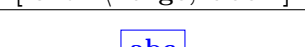

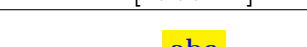
| \draw(0,0) .. controls (1,2) and (2,-1) .. (4,0) node[at end] {texte} ; | | |
|--|--|---|
|  |  |  |
| pos=0 | pos=.33 | at end (pos=1) |
|  |  |  |
| very near end (pos=0.875.) | near end (pos=0.75) | midway (pos=0.5) |
|  |  |  |
| near start (pos=0.25) | very near start (pos=0.125) | at start (pos=0) |


| \draw(0,0) .. controls (1,2) and (2,1) .. (4,0) node[sloped,midway] {texte} ; | | |
|---|---|--|
|  |  |  |
| sloped | above | below |

| \draw(0,0) .. controls (1,2) and (2,1) .. (5,0) node[sloped,midway,allow upside down] {texte} ; | | |
|---|---|--|
|  |  |  |
| sloped | above | below |

| | | |
|---|---|---|
| <code>\draw(A) to [bend right] node [bend right] {texte} (B);</code> | | |
|  |  |  |
| <code>[bend right]</code> | <code>[auto,bend right]</code> | <code>[auto,swap,bend right]</code> |

7.5 Nœuds sur un “edge”

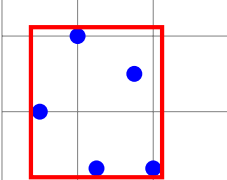
| | | |
|--|---|--|
| <code>\draw(0,0) edge [”abc”, ->] (4,0);</code> <code>PGFmanual section : 17-12-2</code> | | |
|  |  |  |
| <code>[”abc”, ->]</code> | <code>[”abc”, near start]</code> | <code>[”abc”, style={auto=right}]</code> |
|  |  |  |
| <code>[font=\Large,”abc”]</code> | <code>[”abc” color=red]</code> | <code>[”abc” ’]</code> |
|  |  |  |
| <code>[”abc” draw]</code> | <code>[”abc” inner sep=0pt]</code> | <code>[”abc” fill ,fill=yellow]</code> |

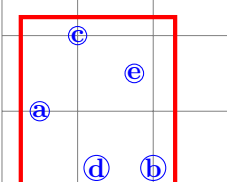
| |
|--|
| <code>\draw[every edge quotes/.style={fill=yellow}] (0,0) edge [”abc”] (4,0);</code> |
|  |

7.6 Nœud enveloppant

Charger l’extension: `\usetikzlibrary{fit}`

PGFmanual section : 52

| | |
|---|--|
|  | <code>\fill (.5,1) circle (3pt);</code> <code>\fill (2,.25) circle (3pt);</code> <code>\fill (1,2) circle (3pt);</code> <code>\fill (1.25,0.25) circle (3pt);</code> <code>\fill (1.75,1.5) circle (3pt);</code> <code>\node[draw=red,ultra thick,fit={(.5,1) (2,.25) (1,2)</code> <code>(1.25,0.25) (1.75,1.5) }] {} ;</code> |
|---|--|

| | |
|---|--|
|  | <code>[dot/.style={inner sep=0pt,draw,circle,blue}]</code> <code>\node[dot] (a) at (.5,1) {a};</code> <code>\node[dot] (b) at (2,.25) {b};</code> <code>\node[dot] (c) at (1,2) {c};</code> <code>\node[dot] (d) at (1.25,0.25) {d};</code> <code>\node[dot] (e) at (1.75,1.5) {e};</code> <code>\node[draw=red,ultra thick,fit=(a) (b) (c) (d) (e)] {}</code> |
|---|--|

| | | |
|--|----------------|------------|
| <pre>\node[draw=red,ultra thick,fit=(a) (b) (c) (d) (e)] (xxx) {} \node at (xxx.east) [fill=green!20] {x};</pre> | | |
| | | |
| xxx.east | xxx.north east | xxx.center |

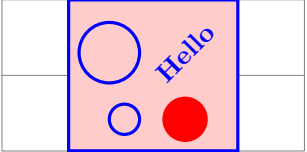
| | |
|--|----------------|
| <pre>\node [draw=green,fit=(a) (b) (c) (d) (e)] ; \node [inner sep=0pt,draw=red,fit=(a) (b) (c) (d) (e)] ;</pre> | |
| | |
| inner sep=0pt | inner sep=.5cm |

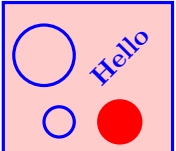
| | | |
|---|---------|------------------------------------|
| <pre>\node[circle,draw=red,inner sep=0pt,fit=(a) (b) (c) (d) (e)] {};</pre> | | |
| | | |
| circle | ellipse | shape=starburst (voir section 17) |

| | |
|--|------------------------|
| <pre>\node[draw=red, rotate fit=45, fit=(a) (b) (c) (d) (e)] {};</pre> | |
| | |
| rotate fit=45 | ellipse, rotate fit=45 |

7.7 Matrice de nœuds

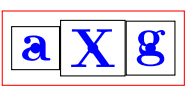
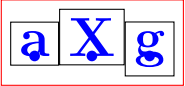
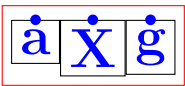
PGFmanual section : 20

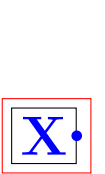
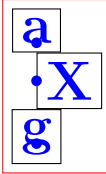
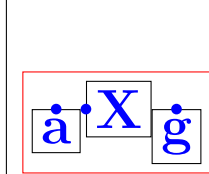
| | |
|---|--|
|  | <pre>\node [matrix,fill=red!10,draw=blue,very thick] at (2,1) { \draw (0,0) circle (4mm); & \node [rotate=45] Hello; \\ \draw (0.2,0) circle (2mm); & \fill[red] (0,0) circle (3mm); \\ };</pre> |
|---|--|

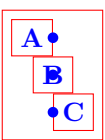
| | |
|---|--|
|  | <pre>\matrix [fill=red!10,draw=blue,very thick] { \draw (0,0) circle (4mm); & \node [rotate=45] Hello; \\ \draw (0.2,0) circle (2mm); & \fill[red] (0,0) circle (3mm); \\ };</pre> |
|---|--|

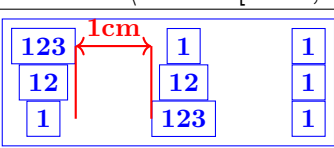
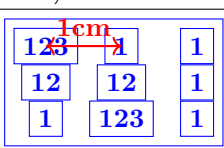
7.7.1 Alignement des cellules

PGFmanual section : 20-3

| | | |
|--|--|--|
|  |  |  |
| | anchor=base | anchor=north |

| | | |
|---|---|---|
|  |  |  |
| | anchor=base | anchor=north |

| | |
|---|--|
|  | <pre>\matrix [draw=red,nodes=draw] { \node[left] A; \fill[blue] (0,0) circle (2pt); \ \ \node B; \fill[blue] (0,0) circle (2pt);\ \ \node[right] C; \fill[blue] (0,0) circle (2pt); \ \ };</pre> |
|---|--|

| \matrix [draw,column sep=1cm,nodes=draw] | |
|---|---|
|  |  |
| column sep=1cm | column sep={1cm,between origins } |

| | |
|---|--------------------------------|
| \backslash matrix [draw,row sep=1cm,nodes=draw] | |
| | |
| row sep=1cm | row sep={1cm,between origins } |

| | |
|---|-----------------------|
| \backslash matrix [row sep=5mm,draw,nodes=draw] { \node {1}; & \node {2}; & \node {3}; \\ \node {4}; & \node {5}; & \node {6}; \\ [1cm] \node {7}; & \node {8}; & \node {9}; \\ } | |
| | |
| [1cm] | [1cm,between origins] |

| | |
|---|-----------------------|
| \backslash matrix [column sep=5mm,draw,nodes=draw] { \node {1}; & \node {2}; & \node {3}; \\ \node {4}; & \node {5}; & [1cm]\node {6}; \\ \node {7}; & \node {8}; & \node {9}; \\ } | |
| | |
| [1cm] | [1cm,between origins] |

| |
|--|
| |
|--|

7.7.2 Format des cellules

| | | |
|--|---|---|
| \backslash matrix [nodes=draw,nodes={fill=blue!10,minimum size=1cm}] | | |
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |

| \matrix[row 2/.style={red}] | | |
|---|---|---|
| <div> <div>8 1 6</div> <div>3 5 7</div> <div>4 9 2</div> </div> | <div> <div>8 1 6</div> <div>3 5 7</div> <div>4 9 2</div> </div> | <div> <div>8 1 6</div> <div>3 5 7</div> <div>4 9 2</div> </div> |
| row 2/.style={red} | column 2/.style={red} | row 2 column 2/.style={red} |

| \matrix[column 1/.style={anchor=west}] | | |
|--|--|--|
| <div> <div>12345 67890</div> <div>123 67</div> <div>1 6</div> </div> | <div> <div>12345 67890</div> <div>123 67</div> <div>1 6</div> </div> | <div> <div>12345 67890</div> <div>123 67</div> <div>1 6</div> </div> |
| [column 1/.style=anchor=west] | [column 1/.style=anchor=east] | [column 1/.style=anchor=base] |

| \matrix[matrix of nodes, every odd column/.style=red] | | | |
|---|---|---|---|
| <div> <div>a b c d</div> <div>e f g h</div> <div>i j k l</div> </div> | <div> <div>a b c d</div> <div>e f g h</div> <div>i j k l</div> </div> | <div> <div>a b c d</div> <div>e f g h</div> <div>i j k l</div> </div> | <div> <div>a b c d</div> <div>e f g h</div> <div>i j k l</div> </div> |
| every odd column | every even column | every odd row | every even row |

| \matrix [draw,matrix of nodes, execute at begin cell={ (}] | |
|--|--|
| | <div> <div>(1 (2</div> <div>(4 (6</div> <div>(9</div> </div> |

| \tikz [matrix of nodes/.style={ execute at begin cell=\node\bgroup , execute at end cell=\$m^2\$\egroup; }] \matrix [draw,matrix of nodes] | |
|--|---|
| | <div> <div>1 m² 2 m²</div> <div>4 m² 6 m²</div> <div>8 m² 9 m²</div> </div> |

| \matrix [raw,matrix of nodes, execute at empty cell=\node{- -};] | |
|--|---|
| | <div> <div>1 2 -</div> <div>4 - 6</div> <div>- - 9</div> </div> |

7.7.3 Points d'ancrage

PGFmanual section : 20-4

| | | |
|---|--------------------|---------------------|
| <code>\matrix [draw=red,nodes=draw,matrix anchor=east](XXX) at (1,1)</code> | | |
| | | |
| matrix anchor=west | matrix anchor=east | matrix anchor=south |

| | |
|--|-------------|
| <code>\matrix [draw=red,nodes=draw,anchor=west]</code> | |
| | |
| anchor=west | anchor=east |

| | |
|--|--|
| | <code>\matrix[draw=red,nodes=draw, matrix anchor=inner node.south, anchor=base, row sep=5mm,column sep=5mm] at (2,1) { \node {a}; & \node {b}; & \node {c}; & \node {d}; \\ \node {a}; & \node {b}; & \node(inner node){c}; & \node {d}; \\ \node{a}; & \node {b}; & \node{c}; & \node {d}; \\ };</code> |
|--|--|

7.7.4 Changement du séparateur

PGFmanual section : 20-5

| | |
|--|--|
| | <code>\tikz \matrix [ampersand replacement=\] { \draw (0,0) circle (4mm); \ \node[rotate=10] {Hello}; \\ \draw (0.2,0) circle (2mm); \ \fill[red] (0,0) circle (3mm); \\ };</code> |
|--|--|

7.8 Matrice de nœuds compléments

Charger l'extension: `\usetikzlibrary{matrix}`

PGFmanual section : 57-1

| | |
|--|--|
| <code>\begin{tikzpicture} \matrix [matrix of nodes] { 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \\ }; \end{tikzpicture}</code> | |
|--|--|

| | |
|--|--|
| | <pre>\begin{tikzpicture} \matrix (XXX) [matrix of nodes] { 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \\ }; \draw[thick,red,->] (XXX-1-1) -- (XXX-2-3) ; \end{tikzpicture}</pre> |
| | |

| | |
|-------|----------------------|
| 8 1 6 | 1 & 2 & 3 \\ |
| 3 5 7 | 4 & 5 & [red] 6 \\ |
| 4 9 2 | 7 & 8 & 9 \\ |

| | | | |
|---|---|---|----------------------------------|
| 1 | 2 | 3 | 1 & [1cm] 2 & [5mm] [red] 3 \\ |
| 4 | 5 | 6 | 4 & 5 & 6 \\ |
| 7 | 8 | 9 | 7 & 8 & 9 \\ |

| | |
|-------------------|---|
| A_1 A_2 A_3 | <pre>\matrix [matrix of math nodes] { A_1 & A_2 & A_3 \\ a_4 & a_5 & a_6 \\ a^7 & a^8 & a^9 \\ };</pre> |
| a_4 a_5 a_6 | |
| a^7 a^8 a^9 | |

| | |
|-------------|---|
| | <pre>\matrix [matrix of math nodes,nodes=circle,draw] { A_1 & & A_3 \\ a_4 & & a_6 \\ a_7 & a_8 & \\ };</pre> |
| a_1 a_3 | |
| a_4 a_6 | |
| a_7 a_8 | |

| | |
|-------------|---|
| | <pre>\matrix [matrix of math nodes,nodes=circle,draw ,nodes in empty cells] { A_1 & & A_3 \\ a_4 & & a_6 \\ a_7 & a_8 & \\ };</pre> |
| a_1 a_3 | |
| a_4 a_6 | |
| a_7 a_8 | |

7.8.1 Texte dans les nœuds

PGFmanual section : 57-2

| | |
|---------|---|
| | <pre>\matrix [matrix of nodes,nodes={text width=2cm,draw}] { aaa & bbb \\ ccc & \\ eee & fff \\ };</pre> |
| aaa bbb | |
| ccc | |
| eee fff | |

| | | |
|---|-------------------|--|
| 1 | aaa bbb ccc | <code>\matrix [matrix of nodes,nodes={text width=16mm,draw}] { 1 & & {aaa \\ bbb \\ ccc } \\ 2 & & ddd \\ };</code> |
| 2 | ddd | |

7.8.2
Délimiteurs

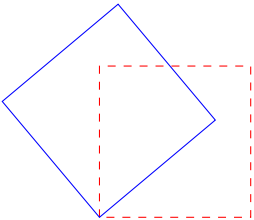
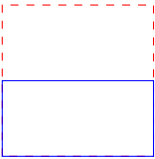
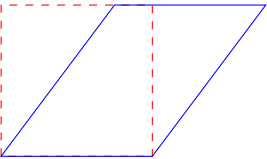
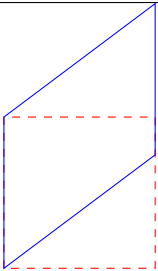
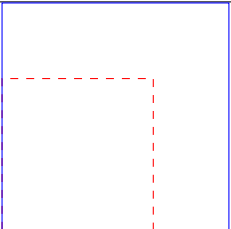
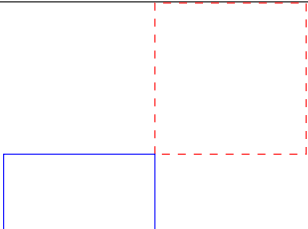
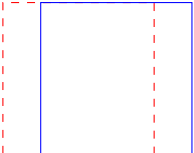
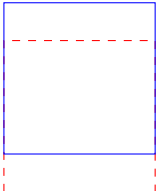
PGFmanual section : 57-3

| <code>\matrix [matrix of math nodes,left delimiter=(]</code> | | | |
|---|--|--|---|
| $\left(\begin{array}{ccc} a_1 & a_2 & a_3 \\ a_4 & a_5 & a_6 \\ a_7 & a_8 & a_9 \end{array} \right)$ | $\left. \begin{array}{ccc} a_1 & a_2 & a_3 \\ a_4 & a_5 & a_6 \\ a_7 & a_8 & a_9 \end{array} \right\}$ | $\overline{\overline{\begin{array}{ccc} a_1 & a_2 & a_3 \\ a_4 & a_5 & a_6 \\ a_7 & a_8 & a_9 \end{array}}}$ | $\underbrace{\begin{array}{ccc} a_1 & a_2 & a_3 \\ a_4 & a_5 & a_6 \\ a_7 & a_8 & a_9 \end{array}}$ |
| <code>left delimiter=(</code> | <code>right delimiter=}</code> | <code>above delimiter= </code> | <code>below delimiter=\rmoustache</code> |

| | |
|---|---|
| <code>\tikz \node [fill=red!20,text width=2cm,left delimiter=\{] {Ceci est une démonstration d'un texte sur une largeur de 2cm.};</code> | |
| | <div> <div></div> <div> Ceci est une dé- monstra- tion d'un texte sur une largeur de 2cm. </div> </div> |

8 Constructions particulières

[PGFmanual section : 25-3](#)

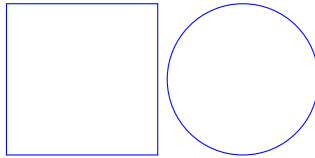
| \draw[rotate ,blue] (0,0) rectangle (2,2) ; | | | |
|---|---|--|---|
|  |  |  |  |
| rotate=40 | x=1cm,y=0.5cm | xslant=0.75 | yslant=0.75 |
|  |  |  |  |
| scale=1.5 | scale=-1 | xshift=0.5cm | yshift=0.5cm |

9 Placer son dessin

9.1 Dans le texte

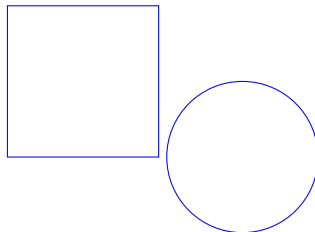
9.1.1 Sans option de décalage

PGFmanual section : 12-2



dessin directement dans le texte : `\tikz \draw (0,0) rectangle(2,2);\tikz \draw (0,0) circle (1);` ici est inclus le code suivant :

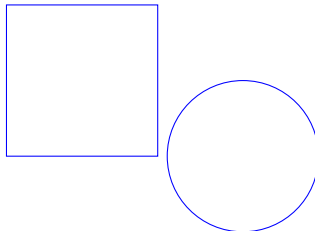
9.1.2 Avec décalage nul



dessin directement dans le texte : `\tikz[baseline=0pt] \draw (0,0) rectangle(2,2);\tikz[baseline=0pt] \draw (0,0) circle (1);` ici est inclus le code suivant :

`\tikz[baseline=0pt] \draw (0,0) rectangle(2,2);\tikz[baseline=0pt] \draw (0,0) circle (1);`

9.1.3 Avec décalage

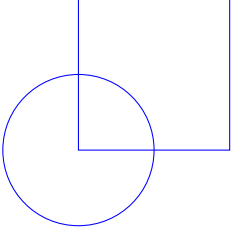
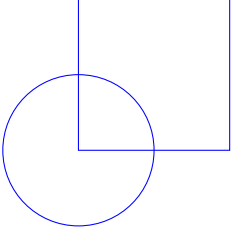
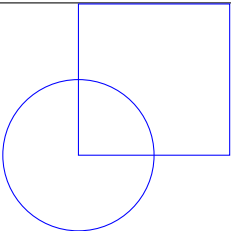


dessin directement dans le texte : `\tikz[baseline=1cm] \draw (0,0) rectangle(2,2);\tikz[baseline=1cm] \draw (0,0) circle (1);` ici est inclus le code suivant

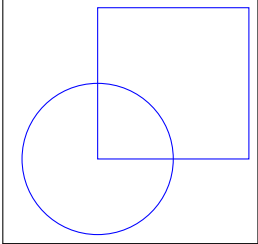
`\tikz[baseline=1cm] \draw (0,0) rectangle(2,2);\tikz[baseline=1cm] \draw (0,0) circle (1);`

9.2 Dans un environnement tikzpicture

PGFmanual section : 12-1



| | |
|--|---|
|  | <pre>texte avant \begin{tikzpicture}[blue] \draw (0,0) rectangle(2,2); \draw (0,0) circle (1); \end{tikzpicture} texte après</pre> |
|  | <pre>texte avant \begin{tikzpicture}[blue,baseline=0pt] \draw (0,0) rectangle(2,2); \draw (0,0) circle (1); \end{tikzpicture} texte après</pre> |
|  | <pre>texte avant \begin{tikzpicture}[blue,baseline=1cm] \draw (0,0) rectangle(2,2); \draw (0,0) circle (1); \end{tikzpicture} texte après</pre> |

9.3 Dans un environnement fbox

| | |
|---|---|
|  | <pre>texte avant \fbbox{ \begin{tikzpicture}[blue,baseline=0pt] \draw (0,0) rectangle(2,2); \draw (0,0) circle (1); \end{tikzpicture} } texte après</pre> |
|---|---|

9.4 Modification du cadrage

PGFmanual section : 15-8

| | |
|---|---|
| <pre>\draw [use as bounding box] (1,0) rectangle (2,1); \draw[blue] (-1,0) - - (3,1);</pre> | |
|  |  |
| <pre>(1,0) rectangle (2,1)</pre> | <pre>(0,0) rectangle (0,0)</pre> |

| | |
|---|---|
| <pre> texte avant. \begin{tikzpicture} [trim left=1cm] \draw[blue] (-1,0) - - (3,1); \draw[red] (0,0) grid (2,1); \end{tikzpicture}texte après </pre> | |
| <pre> texte avant. [trim left=1cm] </pre> | <pre> texte avant. [trim right= 1cm] </pre> |

| | |
|---|--|
| <pre> texte avant \begin{tikzpicture}[blue] \draw [red,use as bounding box] (-1.5,-1.5) rectangle (2.5,2.5); \draw (0,0) rectangle(2,2); \draw (0,0) circle (1); \end{tikzpicture} texte après </pre> | <pre> texte avant \begin{tikzpicture}[blue,baseline=0pt] \draw [red,use as bounding box] (-1.5,-1.5) rectangle (2.5,2.5); \draw (0,0) rectangle(2,2); \draw (0,0) circle (1); \end{tikzpicture} texte après </pre> |
|---|--|

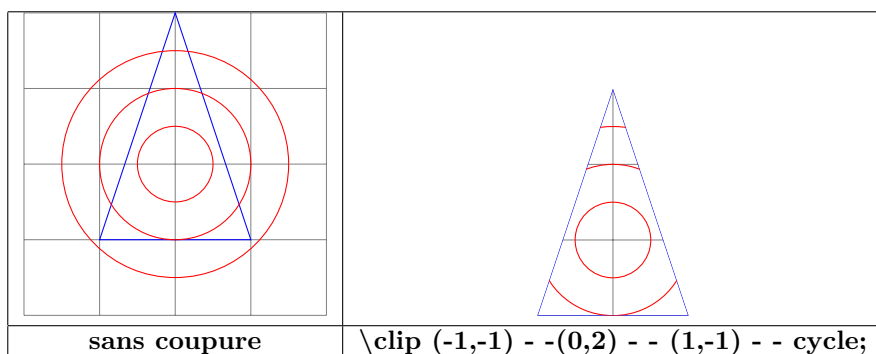
| | |
|--|--|
| <pre> texte avant \begin{tikzpicture}[blue,baseline=0pt] \draw [red,use as bounding box] (-1.5,-1.5) rectangle (2.5,2.5); \draw (0,0) rectangle(2,2); \draw (0,0) circle (1); \end{tikzpicture} texte après </pre> | <pre> texte avant \begin{tikzpicture}[blue,baseline=0pt] \useasboundingbox (-1.5,-1.5) rectangle (2.5,2.5); \draw (0,0) rectangle(2,2); \draw (0,0) circle (1); \end{tikzpicture} texte après </pre> |
|--|--|

| | |
|--|--|
| <pre> texte avant \begin{tikzpicture}[blue,baseline=0pt] \useasboundingbox (-1.5,-1.5) rectangle (2.5,2.5); \draw (0,0) rectangle(2,2); \draw (0,0) circle (1); \end{tikzpicture} texte après </pre> | <pre> texte avant \begin{tikzpicture}[blue,baseline=0pt] \useasboundingbox (-1.5,-1.5) rectangle (2.5,2.5); \draw (0,0) rectangle(2,2); \draw (0,0) circle (1); \end{tikzpicture} texte après </pre> |
|--|--|

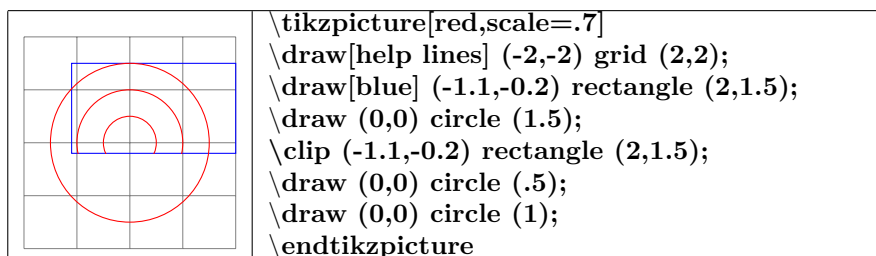
| | |
|--|--|
| <pre> \begin{tikzpicture}[blue] \fill (0,0) circle (5pt); \fill (2,1) circle (5pt); \draw[red] (current bounding box.south west) rectangle (current bounding box.north east); \end{tikzpicture} </pre> | |
|--|--|

9.5 Coupure de l'image

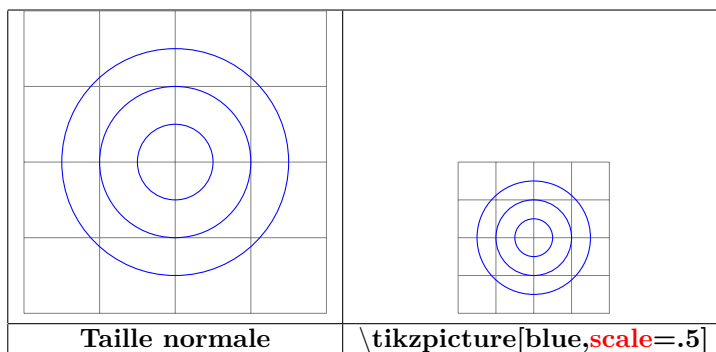
PGFmanual section : 15-9



9.6 Rognage partiel



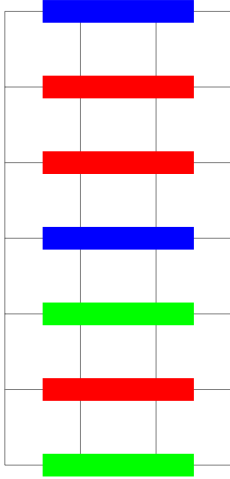
9.6.1 Changement d'échelle



10 Scope

10.1 Environnement Scope

PGFmanual section : 12-3

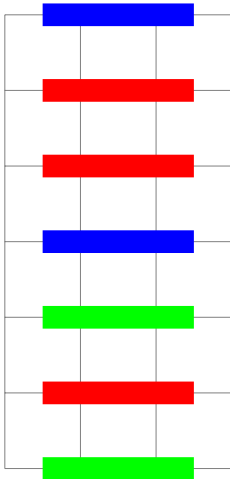
| | |
|--|--|
| <pre> \begin{tikzpicture}[line width = 3mm] \draw (0.5,6) - - (2.5,6); \begin{scope}[red] \draw (0.5,5) - - (2.5,5); \draw (0.5,4) - - (2.5,4); \end{scope} \draw (0.5,3) - - (2.5,3); \begin{scope}[green] \draw (0.5,2) - - (2.5,2); \draw [red] (0.5,1) - - (2.5,1); \draw (0.5,0) - - (2.5,0); \end{scope} \end{tikzpicture} </pre> |  |
|--|--|

10.2 library scopes

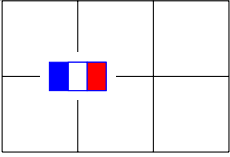
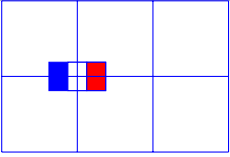
10.2.1 Simplification d'un environnement scope

PGFmanual section : 12-3-2

Charger l'extension: `\usetikzlibrary{scopes}`

| | |
|--|--|
| <pre> \begin{tikzpicture}[line width = 3mm] \draw (0.5,6) - - (2.5,6); { [red] \draw (0.5,5) - - (2.5,5); \draw (0.5,4) - - (2.5,4); } \draw (0.5,3) - - (2.5,3); { [green] \draw (0.5,2) - - (2.5,2); \draw [red] (0.5,1) - - (2.5,1); \draw (0.5,0) - - (2.5,0); } \end{tikzpicture} </pre> |  |
|--|--|

10.2.2 Portée d'un seul élément

| | |
|--|--|
|  |  |
| <pre>\node [fill=white] at (1,1) {\DFR}; \scoped [on background layer] \draw (0,0) grid (3,2);</pre> | <pre>\node [fill=white] at (1,1) {\DFR}; \draw (0,0) grid (3,2);</pre> |

North west

North

North east

11 Position absolue sur une page

```
\begin{tikzpicture}[remember picture,overlay]
\fill(current page.north) circle (5pt) node[below left=4mm] \Huge north ;
\fill(current page.north east) circle (5pt) node[below left=4mm] \Huge north east ;
\fill(current page.north west) circle (5pt) node[below right=4mm] \Huge north west ;
\fill(current page.east) circle (5pt) node[above left=4mm] \Huge east ;
\fill(current page.center) circle (5pt) node[above left=4mm] \Huge center ;
\fill(current page.west) circle (5pt) node[above right=4mm] \Huge west ;
\fill(current page.south) circle (5pt) node[above right=4mm] \Huge south ;
\fill(current page.south west) circle (5pt) node[above right=4mm] \Huge south west ;
\fill(current page.south east) circle (5pt) node[above left=4mm] \Huge south east ;
\end{tikzpicture}
```

```
\begin{tikzpicture}[remember picture,overlay]
\node [opacity=.15] at (current page.center) {\includegraphics[width=8cm]{tiger} };
\end{tikzpicture}
```

```
\begin{tikzpicture}[remember picture,overlay]
\draw[dotted,opacity=.4] (current page.south west) -- (current page.north east)
node[near start] {\Huge TIKZ} ;
\end{tikzpicture}
```

West

center

East

TIKZ

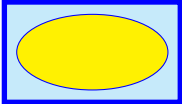
South west

South

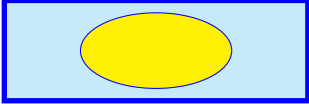
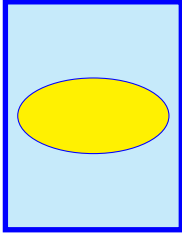
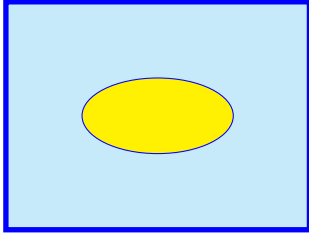
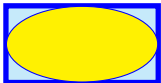
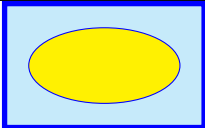
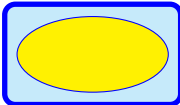
South east

12 Arrière plan du dessin

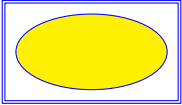
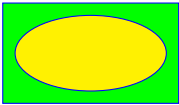
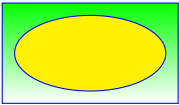
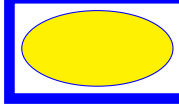
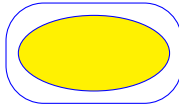
12.1 Encadrement

| | |
|---|---|
|  | ¹ <pre>\begin{tikzpicture}[show background rectangle] \filldraw[fill=yellow] (0,0) ellipse (1 and .5); \end{tikzpicture}</pre> <p><i>Autre syntaxe :</i> <pre>\begin{tikzpicture}[framed]</pre></p> |
|---|---|

12.1.1 Options

| [show background rectangle,inner frame xsep=1cm] | | |
|---|---|--|
|  |  |  |
| inner frame xsep=1cm | inner frame ysep=1cm | inner frame sep=1cm |
| Par défaut : : inner frame xsep=1ex , inner frame ysep=1ex | | |
|  |  |  |
| tight background (inner frame sep = 0pt) | loose background (inner frame sep = 2ex) | rounded corners |

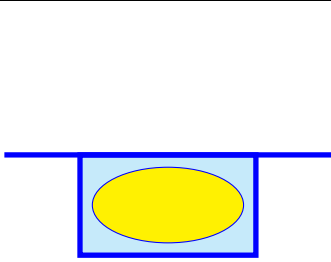
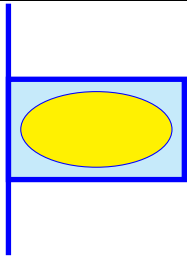
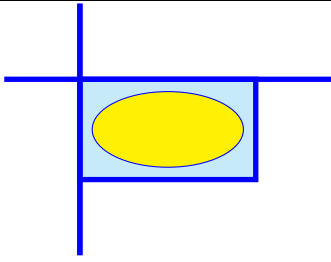
12.1.2 Style

| [background rectangle/.style={double,draw=blue},framed] | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| double | fill=green | top color=green | line width=4pt | rounded corners=0.5cm |

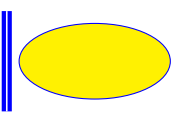
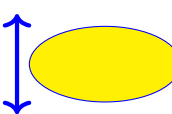
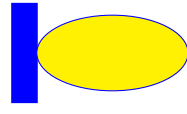
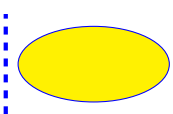
12.2 Encadrement partiel

| | | | |
|---|---|--|---|
|  |  |  |  |
| show background top | show background bottom | show background left | show background right |

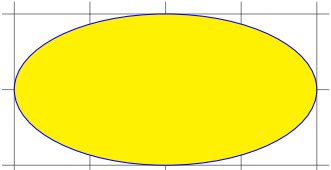
¹\tikzset{background rectangle/.style={fill=cyan!20,draw=blue,line width=2pt}}

| [framed,show background top,outer frame xsep=1cm] | | |
|---|---|--|
|  |  |  |
| outer frame xsep=1cm | outer frame ysep=1cm | outer frame sep=1cm |

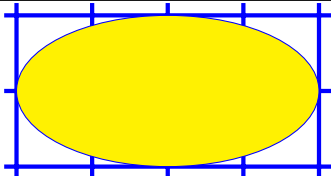
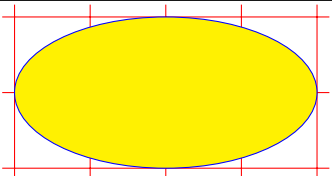
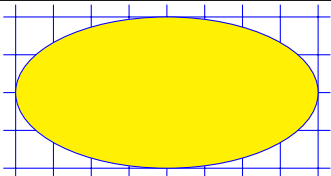
12.2.1 Style

| \begin{tikzpicture}[show background left, [background left/.style={double,ultra thick,draw=blue}]] | | | |
|---|---|---|---|
|  |  |  |  |
| double | <-> | line width=10pt | dashed |

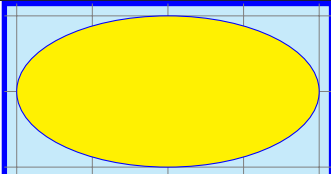
12.2.2 Quadrillage

| | |
|--|---|
|  | <pre>\begin{tikzpicture}[show background grid] \filldraw[fill=yellow] (0,0) ellipse (2 and 1); \end{tikzpicture}</pre> <p><i>Autre syntaxe :</i> <pre>\begin{tikzpicture}[gridded]</pre></p> |
|--|---|

12.2.3 Style

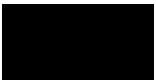






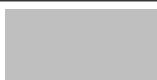









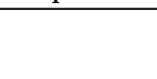

| [background grid/.style={ultra thick,draw=blue},show background grid] | | |
|---|---|--|
|  |  |  |
| ultra thick ,draw=blue,draw=blue | draw=red | step=.5cm,draw=blue |






12.2.4 Encadrement et quadrillage

| | |
|---|---|
|  | <pre>\begin{tikzpicture}[framed , gridded] \filldraw[fill=yellow] (0,0) ellipse (2 and 1); \end{tikzpicture}</pre> |
|---|---|



13 Créer ses couleurs

13.1 Couleurs de base

| | | | | |
|---|---|---|---|--|
|  |  |  |  |  |
| black | blue | brown | cyan | darkgray |
|  |  |  |  |  |
| gray | green | lightgray | lime | magenta |
|  |  |  |  |  |
| olive | orange | pink | purple | red |
|  |  |  |  | |
| teal | violet | white | yellow | |

| | | | | |
|---|---|---|---|--|
|  |  |  |  |  |
| [blue!10] | [blue!30] | [blue!50] | [blue!70] | [blue!90] |


13.2 Mélange de couleurs

| | | | |
|---|---|---|--|
|  |  |  |  |
| [blue!30!red] | [red!80!blue!20] | [red!80!blue!50] | [red!80!blue!50!black!40] |



13.3 Créer son nom de couleur

[PGFmanual section : 15-2](#)

13.3.1 A pourcentage de rouge vert et bleue

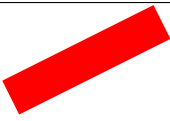
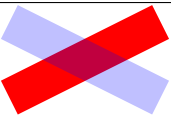
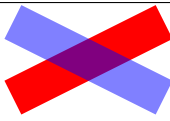
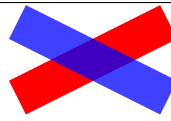
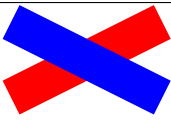
| | |
|---|---|
|  | <pre>\definecolor{macouleur}{rgb}{.75,0.5,0.25}</pre> <p>(75% de rouge 50% de vert 25% de bleu)</p> <pre>\fill [macouleur] (0,0) rectangle (2,1);</pre> |
|---|---|













13.3.2 A partir d'une couleur existante





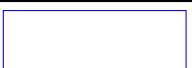
| | |
|---|--|
|  | <pre>\colorlet{monrouge}{red!25}</pre> <pre>\fill [monrouge] (0,0) rectangle (2,1);</pre> |
|  | <pre>\colorlet{monviolet}{red!25!blue}</pre> <pre>\fill [monviolet] (0,0) rectangle (2,1);</pre> |

14 Opacité

[PGFmanual section : 23-2](#)

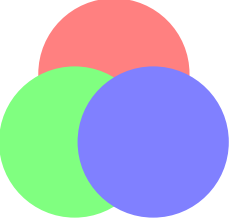

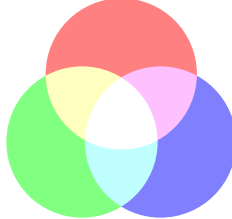

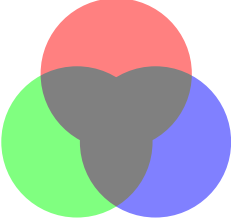

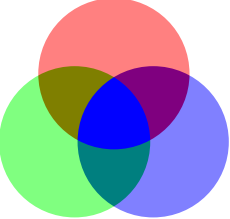

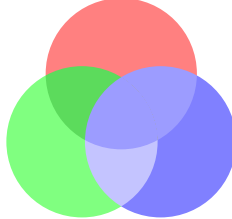
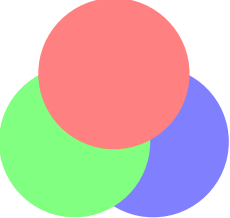
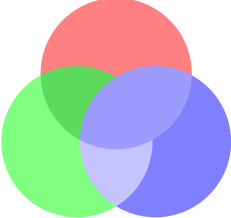
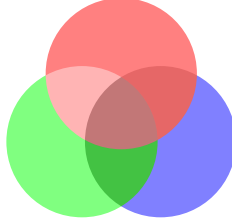
| \draw[red] (0,0) – (2,1); | | \draw [blue,draw opacity=0] (0,1) - - (2,0); | | |
|---|---|---|--|---|
|  |  |  |  |  |
| draw opacity=0 | draw opacity=0.25 | draw opacity=0.5 | draw opacity=0.75 | draw opacity=1 |

| \fill[red] (0,0) rectangle (1,1); | | \fill[blue,transparent] (0.5,0) rectangle (1.5,1); | |
|---|---|---|---|
|  |  |  |  |
| transparent | ultra nearly transparent | very nearly transparent | nearly transparent |
|  |  |  |  |
| semitransparent | nearly opaque | very nearly opaque | ultra nearly opaque |
|  |  |  |  |
| opaque | fill opacity=.25 | fill opacity=.5 | fill opacity=.75 |

| \node at (1,1) [text opacity=1] { \Huge texte} ; | | | | |
|---|---|---|--|---|
|  |  |  |  |  |
| text opacity=1 | text opacity=0.75 | text opacity=0.5 | opacity=0.25 | text opacity=0 |

14.1 Blend Modes

PGFmanual section : 23-3

| | | |
|---|---|--|
|  |  |  |
| blend group=normal | blend group=multiply | blend group=screen |
|  |  |  |
| blend group=overlay | blend group=darken | blend group=lighten |
|  |  |  |
| blend group=difference | blend group=exclusion | blend group=hue |
|  |  |  |
| blend group=saturation | blend group=color | blend group=luminosity |

| | | | |
|---|-----------------------|-----------------------|-----------------------|
| A revoir message d'erreur Unknow blend mode ! | | | |
| blend group=colordodge | blend group=colorburn | blend group=hardlight | blend group=softlight |

14.2 Fading

Charger l'extension: `\usetikzlibrary{fadings}`

14.2.1 Modèles prédéfinis

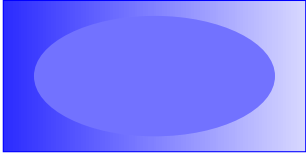

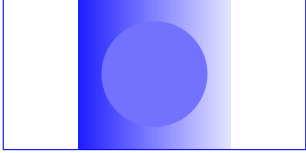





PGFmanual section : 51

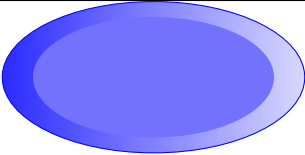
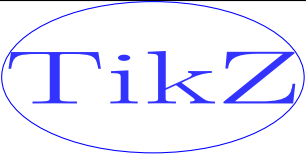
| | | | |
|--|-------------------|---|------------------|
| <code>\fill [blue,path fading=north] (-1,-1) rectangle (1,1);</code> | | | |
| | | | |
| path fading=north | path fading=south | path fading=east | path fading=west |
| | | | |
| path fading=circle with fuzzy edge 10 percent | | path fading=circle with fuzzy edge 15 percent | |
| | | | |
| path fading=circle with fuzzy edge 20 percent | | path fading=fuzzy ring 15 percent | |

14.2.2 Création de décoloration avec tikzfadingfrompicture

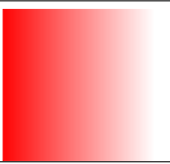
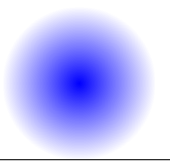
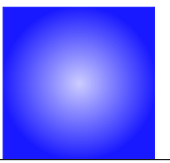
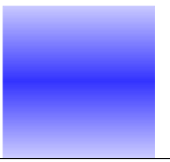
PGFmanual section : 23-4-1

| <i>Création</i> | <i>Visualisation</i> |
|--|----------------------|
| <pre>\begin{tikzfadingfrompicture}[name=filtre] \shade[left color=yellow,right color=blue!100] (0,0) rectangle (2,2); \fill[blue!50] (1,1) circle (0.7); \end{tikzfadingfrompicture}</pre> | |
| <pre>\begin{tikzfadingfrompicture}[name=tikz] \node [draw,text=transparent!20] {\fontfamily{ptm}\fontsize{25}{25}\bfseries\selectfont TikZ}; \end{tikzfadingfrompicture}</pre> | |

| Utilisation dans un rectangle | |
|--|---|
| \fill[path fading =filtre] (-2,-1) rectangle (2,1); | |
|  |  |
| [path fading =filtre] | [path fading =tikz] |
|  |  |
| [path fading=filtre , fit fading =false] | [path fading=tikz, fit fading =false] |
|  |  |
| left color=blue,right color=red | [path left color=blue,right color=red] |
|  |  |
| [path fading=filtre ,red] | [path fading=tikz,red] |


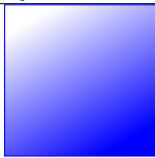
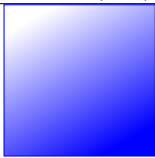
| Utilisation dans un ellipse | |
|---|---|
| \fill[path fading =filtre] (-2,-1) ellipse (2 and 1); | |
|  |  |
| [path fading =filtre] | [path fading =tikz] |

14.3 Création de décoloration avec tikzfading

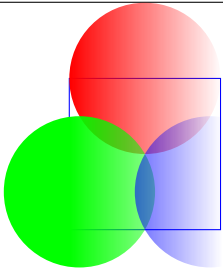
| | |
|---|---|
| <pre>\tikzfading[name=fade right, left color=transparent!0, right color=transparent!100]</pre> <pre>\tikz \filldraw [red,path fading=fade right] (-1,-1) rectangle (1,1);</pre> |  |
| <pre>\tikzfading[name=fade out, inner color=transparent!0, outer color=transparent!100]</pre> <pre>\tikz \filldraw [blue,path fading=fade out] (-1,-1) rectangle (1,1);</pre> |  |
| <pre>\tikzfading[name=fade inside, inner color=transparent!80, outer color=transparent!10]</pre> <pre>\tikz \filldraw [blue,path fading=fade inside] (-1,-1) rectangle (1,1);</pre> |  |
| <pre>\tikzfading[name=middle, top color=transparent!80, bottom color=transparent!80, middle color=transparent!20]</pre> <pre>\tikz \filldraw [blue,path fading=middle] (-1,-1) rectangle (1,1);</pre> |  |

14.3.1 Modification de la décoloration

[PGFmanual section : 23-4-2](#)

| | | |
|--|---|---|
| <pre>\fill [blue,path fading=north,fading transform={yshift=-.5cm}] (-1,-1) rectangle (1,1);</pre> | | |
|  |  |  |
| fading transform={yshift=-.5cm} | fading transform={yshift=-.5cm} | fading angle=30 |

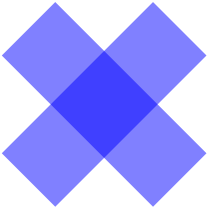
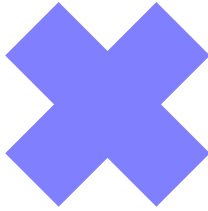
[PGFmanual section : 23-4-3](#)


| | |
|--|--|
| <pre>\begin{tikzpicture} \draw (-1,-1) rectangle (1,1); \path [scope fading=east] (-1,-1) rectangle (1,1); \fill[red] (90:1) circle (1); \fill[green] (210:1) circle (1); \fill[blue] (330:1) circle (1); \end{tikzpicture}</pre> |  |
|--|--|

| | |
|--|---|
| <pre>\tikz \node [black,scope fading=south,fading angle=45,text width=5cm] { VisualTIKZ VisualTIKZ VisualTIKZ Visu- alTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ Visu- alTIKZ VisualTIKZ VisualTIKZ };</pre> | <pre>VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ VisualTIKZ</pre> |
|--|---|

14.4 Transparency Groups

PGFmanual section : 23-5

| | |
|--|---|
| <pre>\begin{tikzpicture}[opacity=.5] \draw [line width=1cm] (0,0) -- (2,2); \draw [line width=1cm] (0,2) -- (2,0); \end{tikzpicture}</pre> | |
|  |  |
| [opacity=.5] | [opacity=.5,transparency group] |

| A revoir : ne fonctionne pas | |
|---|---|
| <pre>\begin{tikzpicture} \shade [left color=red,right color=blue] (-2,-1) rectangle (2,1); \begin{scope}[transparency group=knockout] \fill[white] (-1.9,-.9) rectangle (1.9,.9); \node [opacity=0] TikZ; \end{scope} \end{tikzpicture}</pre> |  |

15 Créer ses commandes

Charger l'extension: Attention : la création de la commande doit être placée avant `\begin{document}` !

syntaxe : `\newcommand{\nom}[nombre de variables]{Description}`

Exemple : commande avec une variable :

Création

```
\newcommand
{\maboite}[1]{ % commande nommée maboite et 1 seul d'argument
\begin{center} % centrage sur la ligne
\tikzpicture \node[fill=yellow] % un nœud de texte de couleur jaune
, text centered % centrage du texte dans la boîte
, text width=.5\linewidth] % largeur : la moitié de la ligne
#1} ; \end{center} % #1 correspond à l'argument
}
```

Utilisation : `\maboite{contenu}`

Charger l'extension: contenu

Exemple : commande sans variable :

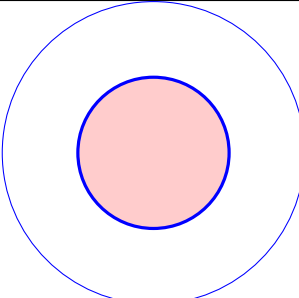
Création

```
\newcommand{\DFR}{\tikzpicture[scale=.25] \draw [fill=blue](0,0) rectangle (3,1.5);
\draw [fill=white](1,0) rectangle (2,1.5); \draw[fill=red](2,0) rectangle (3,1.5);\endtikzpicture }
```



Utilisation : `\DFR` 

16 Créer ses styles

16.1 Styles sans variable

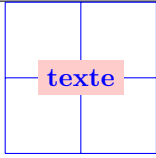
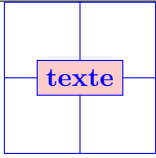
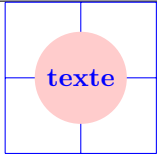
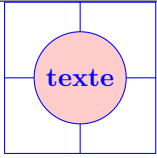
| | |
|---|---|
|  | <pre>\begin{tikzpicture} [mon style/.style={draw=blue, fill=red!20, very thick}] \draw (0,0) circle (2cm); \draw[mon style] (0,0) circle (1cm); \end{tikzpicture}</pre> |
|---|---|

16.2 Styles avec variable









| | |
|---|---|
|  | <pre>\begin{tikzpicture} [mon style/.style={draw=#1, thick, fill=#1!50, scale=.5}] \filldraw [mon style=red] (0,0) rectangle (2,1); \filldraw [mon style=blue] (3,0) rectangle (5,1); \end{tikzpicture}</pre> |
| valeur par défaut | |
|  | <pre>\begin{tikzpicture} [mon style/.style={draw=#1,fill=#1!20,very thick}, mon style/default=black] \filldraw [mon style] (0,0) rectangle (2,1); \filldraw [mon style=blue] (3,0) rectangle (5,1); \end{tikzpicture}</pre> |


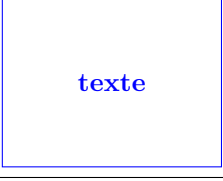


17 Mettre du texte en valeur

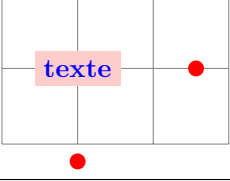
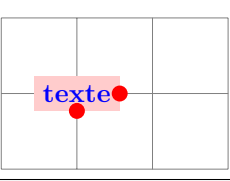
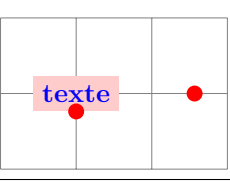
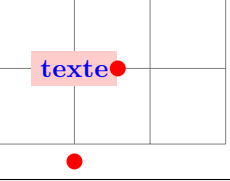
17.1 Dans un nœud de Tikz

| \tikz \draw (0,0) grid (2,2) (1,1) node[fill=red!20,] {texte}; | | | |
|---|---|---|---|
|  |  |  |  |
| node[fill=red!20] | node[fill=red!20,draw] | node[fill=red!20,circle] | node[fill=red!20,circle,draw] |


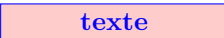

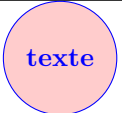
17.1.1 Options

| \tikz \draw node[draw,double,blue] {texte}; | | | | | | | |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| double | rounded corners | ultra thick | dashed | red | rotate=45 | shading=radial | text=red |

| \tikz \draw node[draw,inner sep=0pt] {texte}; | | | |
|---|--|---|---|
|  |  |  |  |
| inner sep=0pt | inner sep=1cm | inner xsep=1cm | inner ysep=1cm |
| Par défaut : : 0.3333em | | | |

| \node [fill=red!20,outer sep=1cm] (A) at (1,1) {texte}; \fill (node cs:name=A,anchor=east) circle (3pt); \fill (node cs:name=A,anchor=south) circle (3pt); | | | |
|--|---|---|--|
|  |  |  |  |
| outer sep=1cm | outer sep=0pt | outer xsep=1cm | outer ysep=1cm |
| Par défaut : : 0.5\pgflinewidth | | | |

17.1.2 Taille minimale des noeuds

| \draw((0,0) node[fill=blue!20,minimum height=1.5cm,draw] {texte} ; | |
|---|---|
|  |  |
| minimum height=1.5cm | minimum width=3cm |
|  |  |
| minimum size=1.5cm,draw | minimum size=1.5cm,circle |

17.2 Dans un nœud à formes géométriques

Charger l'extension: `\usetikzlibrary{shapes.geometric}`

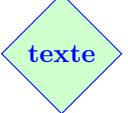
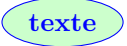


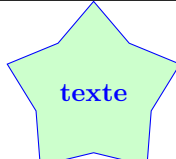
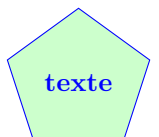
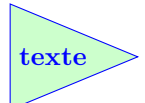
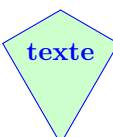
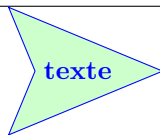
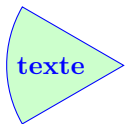

PGFmanual section : 67-3

17.2.1 Formes disponibles

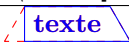
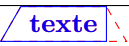
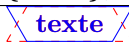
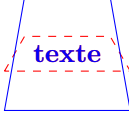

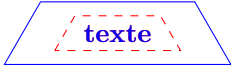
2 syntaxes :

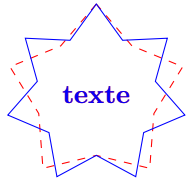
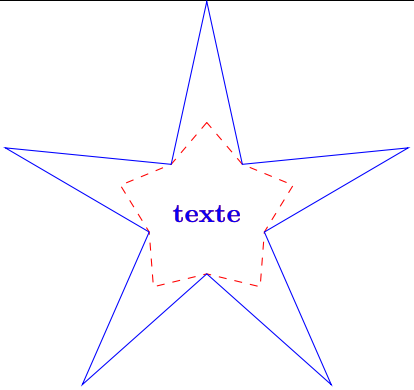
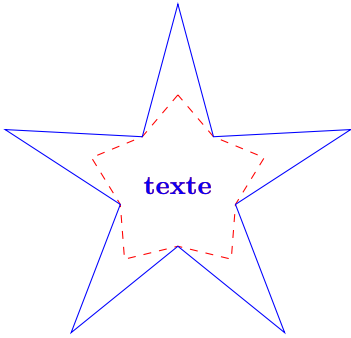
`\tikz \node[fill=green!20,shape=diamond,draw,blue] {texte};`

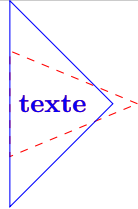
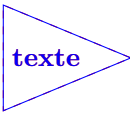
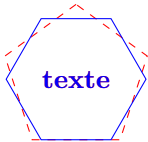
`\tikz \node[fill=green!20,diamond,draw] {texte};`

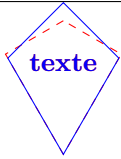
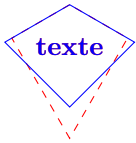
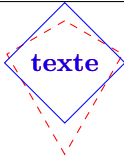
| | | | |
|--|--|---|---|
|  |  |  |  |
| diamond | ellipse | trapezium | semicircle |
|  |  |  |  |
| star | regular polygon | isosceles triangle | kite |
|  |  |  | |
| dart | circular sector | cylinder | |

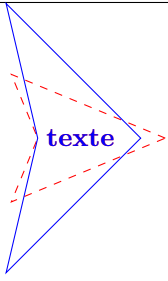
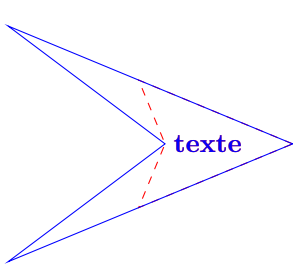
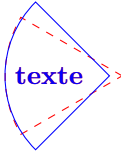
17.2.2 Options





| | | |
|---|---|---|
| <code>\node [trapezium,draw, trapezium left angle=90,draw,blue] {texte};</code> | | |
|  |  |  |
| trapezium left angle=90 | trapezium right angle=90 | trapezium angle=120 |
|  |  |  |
| minimum height=1.5cm trapezium stretches=true | minimum height=1.5cm trapezium stretches=false | minimum width=1.5cm trapezium stretches |





| <code>\tikz \node [fill=green!20,star,star points=6,draw] {texte};</code> | | |
|---|---|--|
|  |  |  |
| star points=7 | star point height = 2cm | star point ratio = 3 |
| Par défaut : 5 | Par défaut : .5cm | Par défaut : 1.5 |

| <code>\node [isosceles triangle,isosceles triangle apex angle=90,draw,blue] {texte};</code> <code>\node [regular polygon, regular polygon sides=6,draw,blue] {texte};</code> | | |
|---|--|--|
|  |  |  |
| isosceles triangle apex angle=90 | isosceles triangle stretches | regular polygon sides=6 |

| <code>\node [kite,kite upper vertex angle=90,draw,blue] {texte};</code> | | |
|---|---|---|
|  |  |  |
| kite upper vertex angle=90 | kite lower vertex angle=90 | kite vertex angles=90 |
| initially 120 | initially 60 | |

| <code>\node [dart,dart tip angle=90,draw,blue] {texte};</code> | | |
|---|---|---|
|  |  |  |
| dart tip angle=90 | dart tail angle=90 | circular sector angle=90 |
| initially 45 | initially 135 | initially 60 |

| | |
|---|---|
| \node [cylinder,aspect=2,draw,blue] {texte}; | |
|  |  |
| aspect=2 | aspect=4 |
|  |  |
| cylinder uses custom fill, cylinder end fill=yellow | cylinder uses custom fill, cylinder body fill=yellow |

| | | | |
|---|---|---|--|
| \draw(0,0) node[shape aspect=1,diamond,draw] {texte} ; | | | |
|  |  |  |  |
| shape aspect=1 | shape aspect=2 | shape aspect=3 | shape aspect=4 |

17.3 Dans un nœud en forme de symboles

Charger l'extension: `\usetikzlibrary{shapes.symbols}`

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17.3.1 Formes disponibles




| | | |
|----------------|------------------|-------|
| | | |
| forbidden sign | magnifying glass | cloud |
| | | |
| starburst | signal | tape |





17.3.2 Options





| <code>\node[magnifying glass,magnifying glass handle angle=45,draw,blue] {texte} ;</code> | | |
|---|---|-----------------------|
| | | |
| magnifying glass handle angle=45 | magnifying glass handle aspect=3 | line width=1ex |
| Par défaut : : -45 | Par défaut : : 1.5 | |


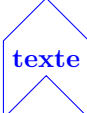
| <code>\node [cloud,cloud puffs=5,draw,blue] {texte};</code> | | | |
|---|---------------------------|-----------------------------------|----------------------------------|
| | | | |
| cloud puffs=5 | cloud puff arc=270 | cloud ignores aspect=false | cloud ignores aspect=true |
| Par défaut : : 10 | Par défaut : : 135 | Par défaut : : true | |







| <code>\node [starburst,starburst points=5,draw,blue] {texte};</code> | | | |
|--|-----------------------------------|----------------------------|---------------------------|
| | | | |
| starburst points=5 | starburst point height=1cm | random starburst=50 | random starburst=0 |

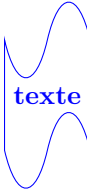
| | | |
|---|---|--|
| \node [signal,signal pointer angle=45,draw,blue] {texte}; | | |
|  |  |  |
| signal pointer angle=45 | signal pointer angle=10 | signal pointer angle=300 |
| Par défaut : : signal pointer angle= 90 | | |

| | | | |
|---|---|---|--|
| \node [signal,signal to=above,draw,blue] {texte}; | | | |
|  |  |  |  |
| signal to=above | signal to=below | signal to=right | signal to=above |

| | | | |
|---|---|---|---|
| \tikz [signal to=nowhere] \node [signal,signal from=above=45,draw,blue] {texte}; | | | |
|  |  |  |  |
| signal from=above | signal from=below | signal from=right | signal from=above |

| | |
|---|---|
|  |  |
| signal from=east , signal to=west | signal from=south, signal to=north |

| | | |
|---|---|---|
| \tikz \node [tape, draw,tape bend top=out and in] {texte}; | | |
|  |  |  |
| tape bend top=out and in | tape bend bottom=out and in | tape bend bottom=in and in |
|  |  |  |
| tape bend top=none | tape bend bottom=out and in tape bend top=out and in | tape bend bottom=in and out tape bend top=in and out (Par défaut :) |



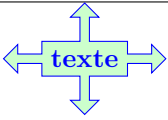
| |
|---|
| \tikz \node [tape, draw, tape bend height=1cm,blue] {texte}; |
|  |
| Par défaut : : tape bend height = 5pt |

17.4 Dans un nœud en forme de flèche

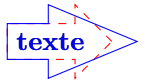
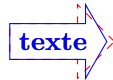
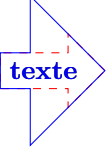

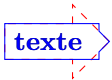
Charger l'extension: `\usetikzlibrary{shapes.arrows}`

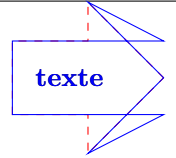
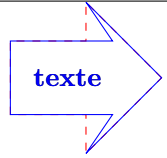
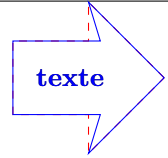
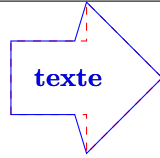
PGFmanual section : 67-5

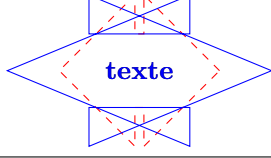
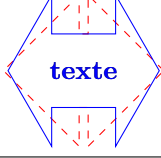
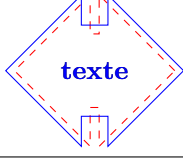
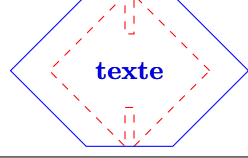
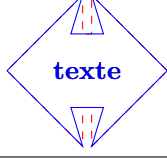
17.4.1 Formes disponibles

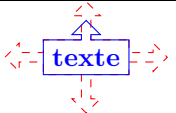
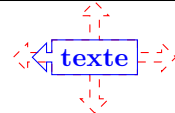
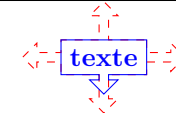
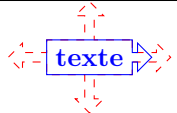
| | | |
|---|---|---|
|  |  |  |
| single arrow | double arrow | arrow box |

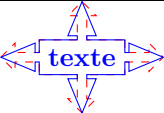
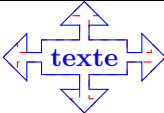
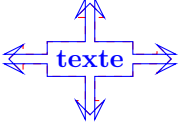
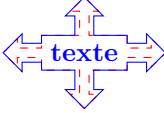
17.4.2 Options

| | | | | |
|---|---|---|--|---|
| <code>\node[single arrow,draw,red,single arrow tip angle=45] {texte};</code> <code>\node[single arrow,draw,red,single arrow head extend=.75cm] {texte};</code> | | | | |
|  |  |  |  |  |
| angle=45 | angle=120 | extend=.75cm] | extend=0cm | extend=-1mm |
| Par défaut : : single arrow tip angle= 90 | | | Par défaut : : single arrow head extend=0.5cm | |

| | | | |
|---|---|---|--|
| <code>\node[minimum size=2cm,single arrow,draw,red,single arrow head indent=1cm,blue] {texte};</code> | | | |
|  |  |  |  |
| indent=1cm | indent=10pt | indent=1ex | indent=-1ex |

| | | | | |
|---|---|---|--|---|
| <code>\node[minimum size=2cm,double arrow,draw,red,double arrow tip angle=45] {texte};</code> <code>\node[minimum size=2cm,double arrow,draw,red,double arrow head extend=1ex] {texte};</code> <code>\node[minimum size=2cm,double arrow,draw,red,double arrow head indent=1ex] {texte};</code> | | | | |
|  |  |  |  |  |
| angle=45 | angle=120 | extend=1ex | extend=0 | indent=1ex |

| | | | |
|---|---|---|--|
| <code>\node [arrow box, draw, red, arrow box arrows={north:.25cm}] {texte};</code> | | | |
|  |  |  |  |
| {north:.25cm} | {west:.25cm} | {south:.25cm} | {east:.25cm} |
| Par défaut : : 0.5 cm | | | |




| | |
|---|---|
| \node [arrow box, draw, arrow box tip angle=45] {texte}; | |
|  |  |
| arrow box tip angle=45 | arrow box head extend=.25cm |
| Par défaut : : 90 | Par défaut : : 0.125cm |
|  |  |
| arrow box head indent=.25cm | arrow box shaft width=.25cm |
| Par défaut : : 0cm | Par défaut : : 0.125cm |

17.5 Dans un nœud en forme de bulle


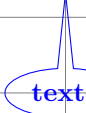
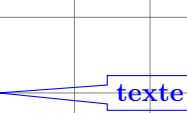
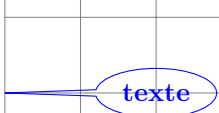


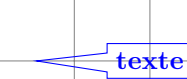
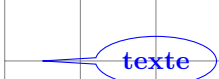
Charger l'extension: `\usetikzlibrary{shapes.callouts}`




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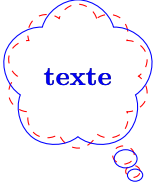


17.5.1 Formes disponibles






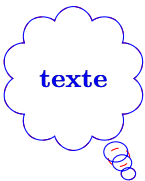
| | | |
|---|---|---|
|  |  |  |
| ellipse callout | rectangle callout | cloud callout |

17.5.2 Options

| | | | | | | | |
|--|--|---|--|---|--|--|--|
| <code>\node [rectangle callout,draw,callout absolute pointer=(0,1)] at (2,1) {texte};</code> | | | | | | | |
|  | |  | |  | |  | |
| callout relative pointer={ (0,1) } | | | | callout absolute pointer={ (0,1) } | | | |
|  | |  | |  | |  | |
| callout pointer shorten=.5cm | | | | | | | |

| | | |
|---|---|--|
| <code>\node [ellipse callout,draw,callout pointer arc=1] at (0,1.5) {texte};</code> | | |
|  |  |  |
| <code>callout pointer arc=1</code> | <code>callout pointer arc=30</code> | <code>callout pointer arc=90</code> |
| Par défaut : <code>callout pointer arc=15</code> | | |

| | | |
|---|---|---|
| <code>\node[draw,cloud callout, aspect=2.5] {texte};</code> | | |
|  |  |  |
| <code>cloud puffs=5</code> | <code>aspect=2.5</code> | <code>cloud puff arc=120</code> |





| | | |
|---|---|---|
| \node [draw,cloud callout,callout pointer start size=.1] {texte}; | | |
|  |  |  |
| callout pointer start size=.1 | start size=.8cm | start size=20pt and 1pt |
| Par défaut : : callout pointer start size =.2 of callout | | |
|  |  |  |
| callout pointer end size=.5 | callout pointer end size=.8cm | callout pointer segments=3 |
| Par défaut : : callout pointer start size = .1 of callout | Par défaut : : segments=2 | |

17.6 Dans un nœud en diverses formes diverses

Charger l'extension: `\usetikzlibrary{shapes.misc}`






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17.6.1 Formes disponibles




| | | | |
|---|---|---|---|
|  |  |  |  |
| cross out | strike out | rounded rectangle | chamfered rectangle |

17.6.2 Options





Options pour “rounded rectangle” :




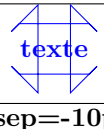

| | | | | |
|--|---|---|---|---|
| <code>\node [draw, rounded rectangle,rounded rectangle arc length=270] {texte};</code> | | | | |
|  |  |  |  |  |
| 270 | 180 | 120 | 90 | 45 |


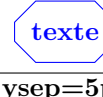

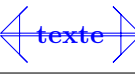

| | | | | | |
|--|---|---|---|--|--|
| <code>\node [draw, rounded rectangle,rounded rectangle west arc=concave] {texte};</code> | | | | <code>\node [draw, rounded rectangle,rounded rectangle left arc=concave] {texte};</code> | |
|  |  |  |  | | |
| concave | convex | none | | | |




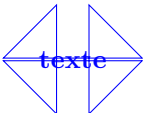
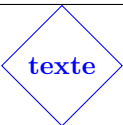
| | | | |
|--|---|---|--|
| <code>\node [draw, rounded rectangle,rounded rectangle east arc=concave] {texte};</code> | | <code>\node [draw, rounded rectangle,rounded rectangle right arc=concave] {texte};</code> | |
|  |  |  | |
| concave | convex | none | |


Options pour “chamfered rectangle” :

| | | | |
|--|---|---|---|
| <code>\node [draw, chamfered rectangle,chamfered rectangle angle=30] {texte};</code> | | | |
|  |  |  |  |
| 10 | 30 | 60 | 80 |
| Par défaut : : 45 | | | |

| | | | | |
|---|---|---|---|--|
| <code>\node [draw, chamfered rectangle,chamfered rectangle xsep=10pt] {texte};</code> | | | | |
|  |  |  |  |  |
| xsep=0pt | xsep=5pt | xsep=10pt | xsep=-10pt | xsep=2cm |
| Par défaut : : 0.666ex | | | | |

| | | | | |
|---|---|---|---|--|
| <code>\node [draw, chamfered rectangle,chamfered rectangle ysep=10pt] {texte};</code> | | | | |
|  |  |  |  |  |
| ysep=0pt | ysep=5pt | ysep=10pt | ysep=-10pt | ysep=1cm |

| | | | | |
|---|---|---|---|--|
| \node [draw, chamfered rectangle, chamfered rectangle ysep=10pt] {texte}; | | | | |
|  |  |  |  |  |
| sep=0pt | sep=5pt | sep=10pt | sep=-10pt | sep=1cm |

| | | |
|--|---|--|
| \node [draw, chamfered rectangle, chamfered rectangle corners=north west] {texte}; | | |
|  |  |  |
| north west | {north east, south east} | {north east, south west} |

17.7 Nœuds à plusieurs parties

Charger l'extension: `\usetikzlibrary{shapes.multipart}`

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| | | | |
|---|----------------|---------------|-----------------|
| <code>\node [circle split,draw,fill=green!20]{haut \nodepart{lower} bas };</code> | | | |
| | | | |
| circle split | circle solidus | ellipse split | rectangle split |


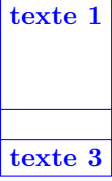


| | |
|--|--|
| | <code>\node[rectangle split,rectangle split parts=5,draw]{texte 1\nodepart{second} texte 2\nodepart{four} texte 3};</code> Par défaut : : rectangle split parts=4 |
|--|--|

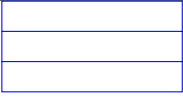

| | | |
|--|--|--|
| <code>\node [rectangle split,rectangle split parts=3,rectangle split horizontal,draw,blue]{texte1\nodepart{two}texte2\nodepart{three}texte3};</code> | | |
| | | |


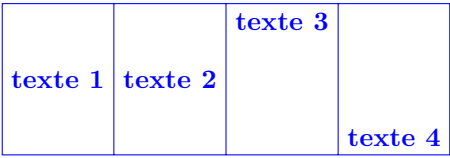
| | |
|--|--|
| | <code>\node[rectangle split,rectangle split parts=5,draw]{texte 1\nodepart{second} texte 2a \\texte 2b \\texte 2c\nodepart{three} texte 3a \\ texte 3b };</code> |
|--|--|

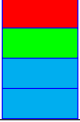
| | |
|---|------------------------------------|
| <code>\node[rectangle split, draw,blue,minimum size = 2cm,rectangle split draw splits= true]{texte 1 \nodepart{two} texte 2 \nodepart{three} texte 3 \nodepart{four} texte 4};</code> | |
| | |
| rectangle split draw splits= true Par défaut : | rectangle split draw splits= false |

| | |
|--|---|
| <code>\node [rectangle split,rectangle split parts=3,draw,rectangle split ignore empty parts=false]{texte 1 \nodepart{second} \nodepart{third}texte 3};</code> | |
| | |
| rectangle split ignore empty parts=false | rectangle split ignore empty parts=true |

| | |
|---|--|
| <code>\node [rectangle split,rectangle split parts=3,draw,rectangle split empty part depth=1cm] {texte 1 \nodepart{second} \nodepart{third}texte 3};</code> | |
|  |  |
| rectangle split empty part depth=1cm | text depth=1cm |
| Par défaut : : 0ex | Par défaut : : 0ex |
|  |  |
| rectangle split empty part height=1cm | text height=1cm |
| Par défaut : : 1ex | Par défaut : : 1ex |

| | |
|--|---|
| <code>\node [rectangle split,rectangle split parts=3,draw,rectangle split empty part width=1cm] {};</code> | |
|  |  |
| rectangle split empty part width=2cm | Par défaut : : 1ex |

| | |
|---|--|
|  | <code>\node[rectangle split, draw,blue,minimum size = 2cm, rectangle split part align={center, left,right}] {texte 1 \nodepart{two} texte 2 \nodepart{three} texte 3 \nodepart{four} texte 4};</code> |
|  | <code>\node[rectangle split, draw,blue,minimum size = 2cm, rectangle split horizontal, rectangle split part align={center,base, top,bottom}] {texte 1 \nodepart{two} texte 2 \nodepart{three} texte 3 \nodepart{four} texte 4};</code> |

| | |
|---|---|
|  | <code>\node[rectangle split, draw,blue, minimum width=1cm, rectangle split part fill={red, green,cyan}]{};</code> |
|---|---|

17.8 Mise en forme du texte

17.8.1 Position

PGFmanual section : 17-4-3

| \tikz \draw (0,0) node[fill=blue!10,text width=2cm,text justified]{Ceci est une démonstration d'un texte sur une largeur de 2cm}; | | | |
|---|--|--|--|
| Ceci est une démonstration d'un texte sur une largeur de 2cm. | Ceci est une démonstration d'un texte sur une largeur de 2cm | Ceci est une démonstration d'un texte sur une largeur de 2cm . | Ceci est une démonstration d'un texte sur une largeur de 2cm . |
| sans option | text justified | text centered | text ragged |
| Ceci est une démonstration d'un texte sur une largeur de 2cm. | Ceci est une démonstration d'un texte sur une largeur de 2cm . | Ceci est une démonstration d'un texte sur une largeur de 2cm . | Ceci est une démonstration d'un texte sur une largeur de 2cm . |
| text badly ragged | text badly centered | align=center | align=flush center |
| Ceci est une démonstration d'un texte sur une largeur de 2cm . | Ceci est une démonstration d'un texte sur une largeur de 2cm . | Ceci est une démonstration d'un texte sur une largeur de 2cm . | Ceci est une démonstration d'un texte sur une largeur de 2cm . |
| align=justify | align=flush right | align=right | align=flush left |



17.8.2 Couleur et fontes

| | | | | | |
|---------------|-----------------|-----------------|-----------------|-----------------|------------------|
| Texte. | <i>Texte.</i> | <i>Texte.</i> | Texte. | Texte. | Texte. |
| [text= red] | [font=\itshape] | [font=\slshape] | [font=\scshape] | [font=\upshape] | [font=\bfseries] |

17.8.3 Taille des fontes

| \tikz \draw (0,0) node[font=\tiny]{Texte.} | | | | | | |
|--|---------------|--------|--------|--------|--------|--------|
| <small>Texte.</small> | Texte. | Texte. | Texte. | Texte. | Texte. | Texte. |
| \tiny | \footnotesize | \small | \large | \Large | \huge | \Huge |

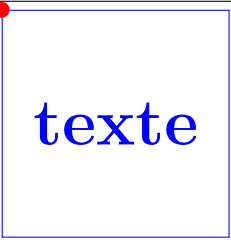
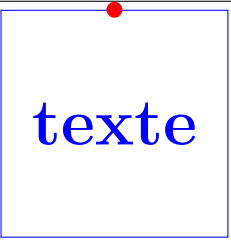
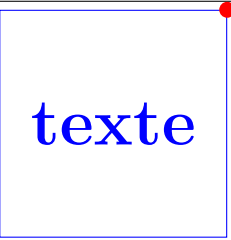
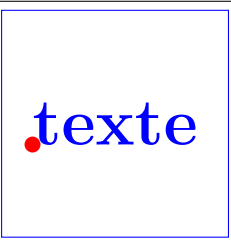
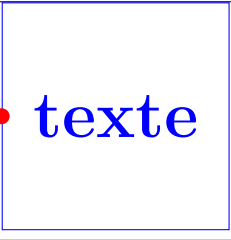
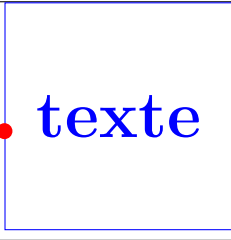
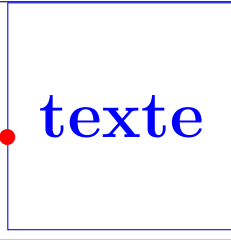
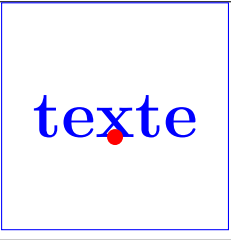
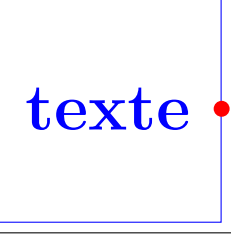
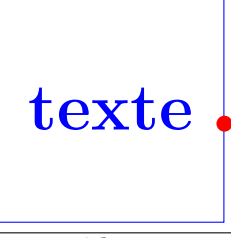
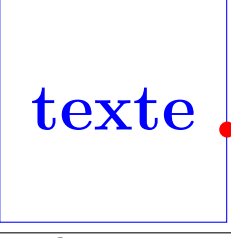
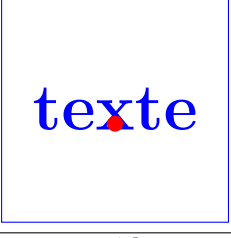
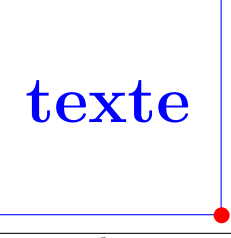
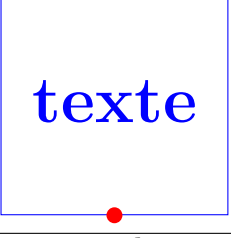
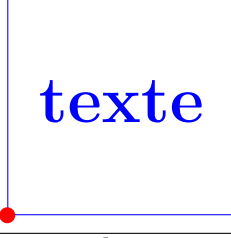
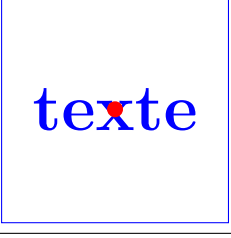
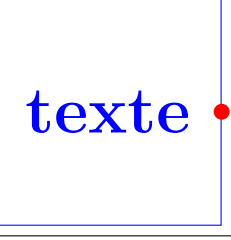
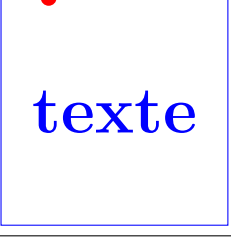
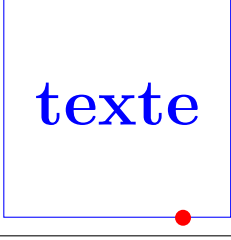
PGFmanual section : 17-4-4

| | |
|---|---|
|  |  |
| <code>text height=1cm</code> | <code>text depth=1cm</code> |

17.9 Positions prédéfinies sur un nœud

17.9.1 pour l'ensemble des nœuds

PGFmanual section : 17-5-1

| | | | |
|---|---|---|--|
|  |  |  |  |
| north west | north | north east | text |
|  |  |  |  |
| west | mid west | base west | base |
|  |  |  |  |
| east | mid esat | base east | mid |
|  |  |  |  |
| south east | south | south west | center |
|  |  |  | |
| 0 | 120 | -60 | |

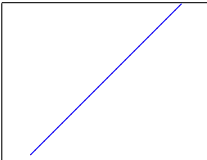
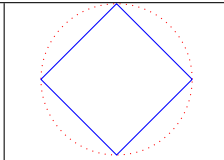
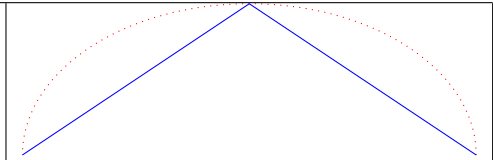
17.9.2 spécifique à un nœud
 Dans une prochaine version !

18 Decorations

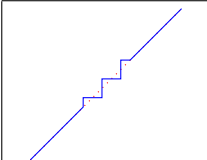
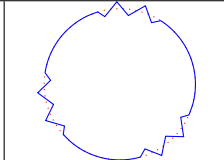
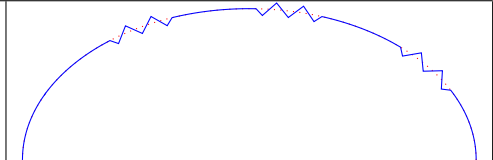
18.1 Library “decorations.pathmorphing”

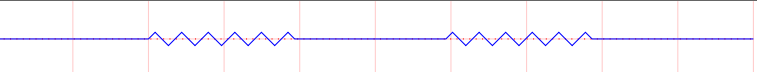
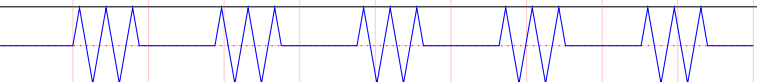
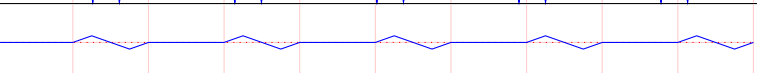
PGFmanual section : 48-2

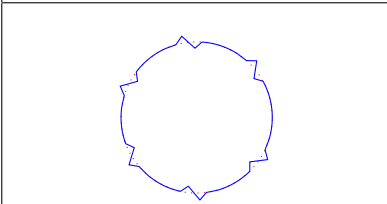
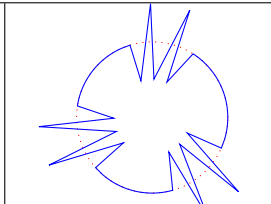
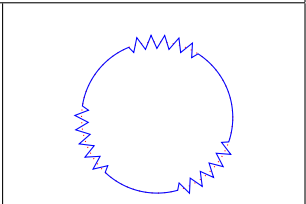
18.1.1 “lineto”

| | | |
|---|---|--|
|  |  |  |
| (0,0) - - (2,2) | (1,1) circle (1) | (0,0) arc (0:180:3 and 2) |

18.1.2 “straight zigzag”

| | | |
|--|--|---|
| \draw[decorate,decoration=straight zigzag] (0,0) - - (2,2) ; | | |
|  |  |  |
| (0,0) - - (2,2) | (1,1) circle (1) | (0,0) arc (0:180:3 and 2); |

| | | | |
|--|--|--|--------------|
| \draw[decorate,decoration={straight zigzag,meta-segment length=2cm}] (0,0) - - (10,0); | | | Par défaut : |
| meta-segment length=2cm |  | | 1cm |
| amplitude=0.5cm |  | | 2.5pt |
| segment length=1cm |  | | 10pt |

| | | |
|--|---|--|
| \draw[decorate,decoration={straight zigzag,meta-segment length=0.5cm}] (1,1) circle (1); | | |
|  |  |  |
| meta-segment length=2cm | amplitude=0.5cm | segment length=5pt |

18.1.3 “random steps”

| \draw[decorate,decoration= random steps] (0,0) - - (2,2) ; | | |
|--|------------------|---------------------------|
| | | |
| (0,0) - - (2,2) | (1,1) circle (1) | (0,0) arc (0:180:3 and 2) |

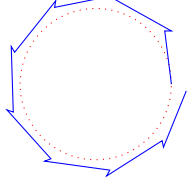
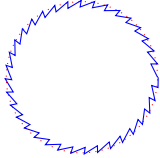
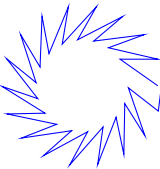
| \draw[decorate,decoration={random steps, segment length =2cm}] (0,0) - - (10,0); | | | Par défaut : |
|---|--|--|--------------|
| segment length =2pt | | | 10pt |
| segment length =1cm | | | |
| amplitude =0.5cm | | | 2.5pt |
| amplitude =0.5cm ,segment length =1cm | | | |

| \draw[decorate,decoration={random steps, segment length =2cm}] (1,1) circle (1); | | |
|---|-------------------------|----------------------------|
| | | |
| meta-segment length =2cm | amplitude =0.5cm | segment length =5pt |

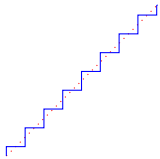
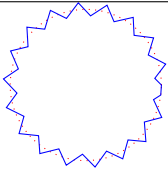
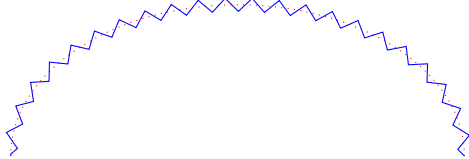
18.1.4 “saw”



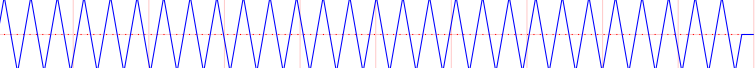
| \draw[decorate,decoration= saw] (0,0) - - (2,2) ; | | |
|---|------------------|----------------------------|
| | | |
| (0,0) - - (2,2) | (1,1) circle (1) | (0,0) arc (0:180:3 and 2); |

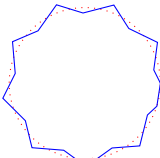
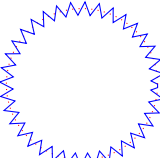
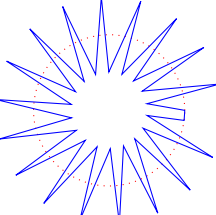
| \draw[decorate,decoration={saw, meta-segment length =0.5cm}] (0,0) - - (10,0); | | | Par défaut : |
|---|--|--|--------------|
| segment length =0.5cm | | | 10 pt |
| segment length =2cm | | | |
| amplitude =0.5cm | | | 2.5 pt |

| | | |
|---|---|--|
| <code>\draw[decorate,decoration={saw,segment length=20pt}] (1,1) circle (1);</code> | | |
|  |  |  |
| segment length=20pt | segment length=5pt | amplitude=0.5cm |

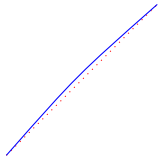
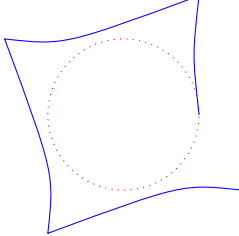
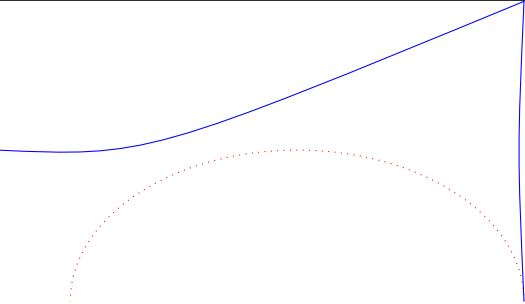
18.1.5 “zigzag”


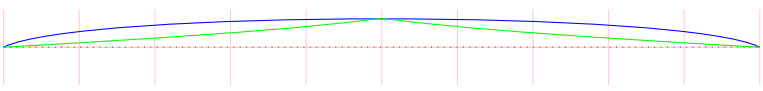
| | | |
|---|---|--|
| <code>\draw[decorate,decoration=zigzag] (0,0) - - (2,2) ;</code> | | |
|  |  |  |
| <code>(0,0) - - (2,2)</code> | <code>(1,1) circle (1)</code> | <code>(0,0) arc (0:180:3 and 2);</code> |

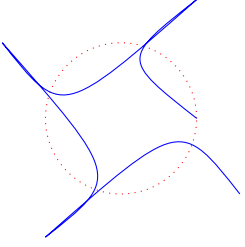
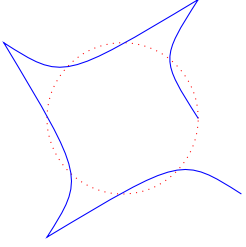
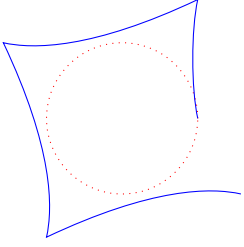
| | | |
|--|--|--------------|
| <code>\draw[decorate,decoration={zigzag,meta-segment length=2cm}] (0,0) - - (10,0);</code> | | Par défaut : |
| segment length=0.5cm |  | 10pt |
| segment length=2cm |  | |
| amplitude=0.5cm |  | 2.5 pt |

| | | |
|--|---|--|
| <code>\draw[decorate,decoration= {saw,segment length=20pt }] (1,1) circle (1);</code> | | |
|  |  |  |
| segment length=20pt | segment length=5pt | amplitude=0.5cm |

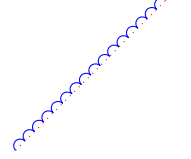
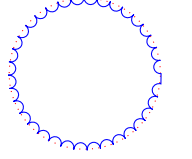

18.1.6 “bent”

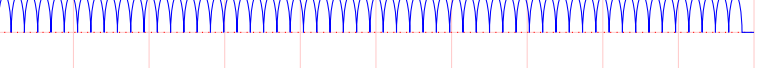
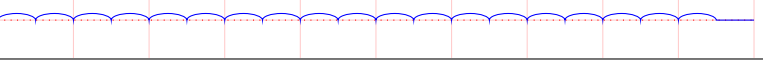
| | | |
|---|---|--|
|  |  |  |
| <code>(0,0) - - (2,2)</code> | <code>(1,1) circle (1)</code> | <code>(0,0) arc (0:180:3 and 2);</code> |

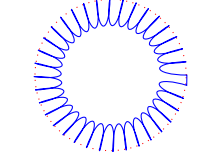
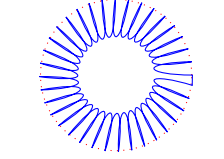
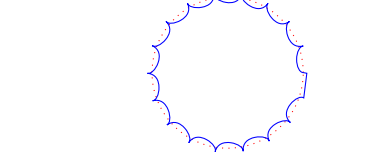
| | | |
|---|--|--------------|
| <code>\draw[decorate,decoration={bent,amplitude=0.5cm}] (0,0) - (10,0);</code> | | Par défaut : |
| <code>amplitude=0.5cm</code> |  | 2.5 pt |
| <code>aspect=0.1 (en bleue)</code> <code>aspect=0.9 (en vert)</code> <code>amplitude=0.5cm</code> |  | 0.5 |

| | | |
|---|---|---|
|  |  |  |
| <code>amplitude=1cm</code> | <code>amplitude=0.5cm</code> | <code>aspect=0.25</code> |

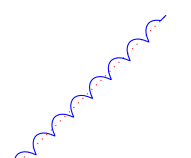
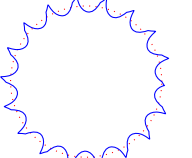
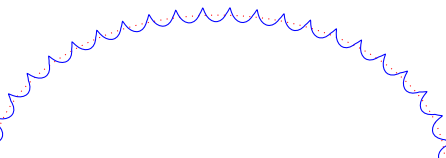
18.1.7 “bumps”

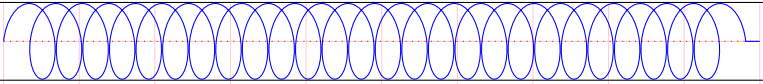
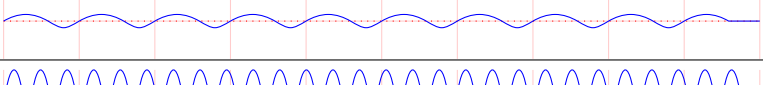
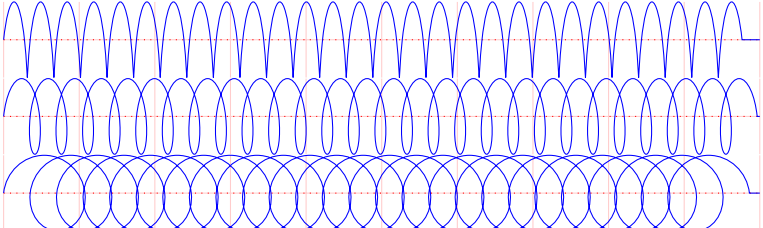
| | | |
|--|--|---|
| <code>\draw[decorate,decoration=bumps] (0,0) - - (2,2);</code> | | |
|  |  |  |
| <code>(0,0) - - (2,2)</code> | <code>(1,1) circle (1)</code> | <code>(0,0) arc (0:180:3 and 2)</code> |

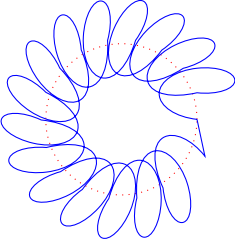
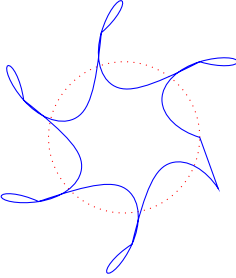
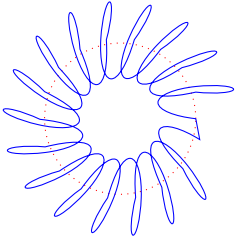
| | | |
|---|--|--------------|
| <code>\draw[decorate,decoration={bumps,amplitude=0.5cm}] (0,0) - - (10,0);</code> | | Par défaut : |
| <code>amplitude=0.5cm</code> |  | 2.5 pt |
| <code>segment length=1cm</code> |  | 10 pt |

| | | |
|---|---|--|
| <code>\draw[decorate,decoration={bumps,amplitude=10pt}] (1,1) circle (1);</code> | | |
|  |  |  |
| <code>amplitude=10pt</code> | <code>amplitude=0.5cm</code> | <code>segment length=20pt</code> |

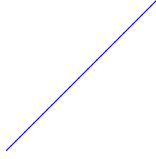
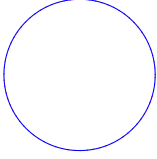
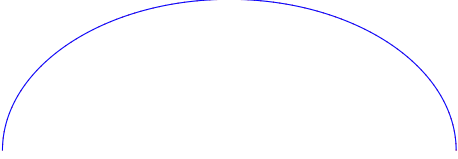
18.1.8 “coil”

| | | |
|---|---|--|
| <code>\draw[decorate,decoration=coil] (0,0) - - (2,2);</code> | | |
|  |  |  |
| <code>(0,0) - - (2,2)</code> | <code>(1,1) circle (1)</code> | <code>(0,0) arc (0:180:3 and 2)</code> |

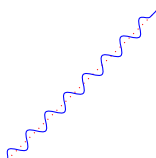
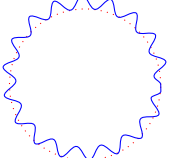
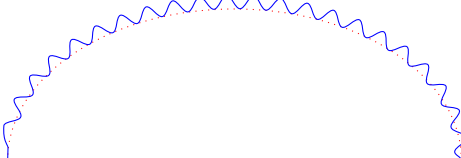
| \draw[decorate,decoration={coil,amplitude=0.5cm}] (0,0) - - (10,0); | | Par défaut : |
|---|--|--------------|
| amplitude=0.5cm |  | 2.5 pt |
| segment length=1cm |  | 10 pt |
| aspect=0.1 (amplitude=0.5cm) |  | 0.5 |
| aspect=0.3 | | |
| aspect=0.9 | | |

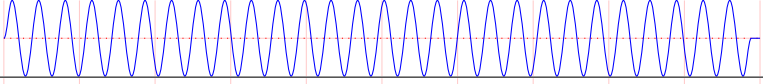
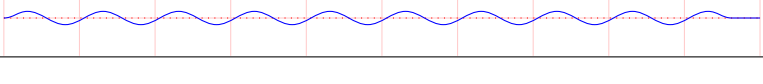
| \draw[decorate,decoration={coil,amplitude=0.5cm}] (1,1) circle (1); | | |
|---|---|--|
|  |  |  |
| amplitude=0.5 cm | segment length=1cm amplitude=0.5cm | aspect=0.25 amplitude=0.5cm |

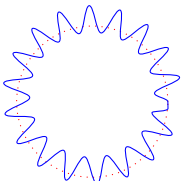
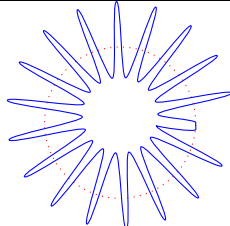
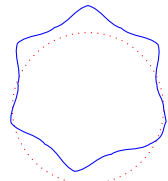
18.1.9 “curveto”

| | | |
|---|---|--|
|  |  |  |
| (0,0) - - (2,2) | (1,1) circle (1) | (0,0) arc (0:180:3 and 2) |

18.1.10 “snake”

| \draw[decorate,decoration={snake,segment length=2cm}] (0,0) - - (2,2) ; | | |
|---|---|--|
|  |  |  |
| (0,0) - - (2,2) | (1,1) circle (1) | (0,0) arc (0:180:3 and 2) |

| \draw[decorate,decoration={snake,segment length=2cm}] (0,0) - - (10,0); | | Par défaut : |
|---|--|--------------|
| amplitude=0.5cm |  | 2.5 pt |
| segment length=1cm |  | 10 pt |

| | | |
|---|---|---|
| \draw[decorate,decoration= snake, amplitude=5pt] (1,1) circle (1); | | |
|  |  |  |
| amplitude=5pt | amplitude=0.5cm | segment length=5pt |

18.2 Library “decorations.pathreplacing”

Charger l'extension: `\usetikzlibrary{decorations.pathreplacing}`

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18.2.1 “border”

| <code>\draw[decorate,decoration=border] (0,0) - - (2,2) ;</code> | | |
|---|------------------|---------------------------|
| | | |
| (0,0) - - (2,2) | (1,1) circle (1) | (0,0) arc (0:180:3 and 2) |

| <code>\draw[decorate,decoration={border,amplitude=0.5cm}] (0,0) - - (10,0);</code> | | Par défaut : |
|---|--|--------------|
| amplitude =0.5cm | | 2.5 pt |
| segment length =1cm , amplitude =0.5cm | | 10 pt |
| angle =90 , amplitude =0.5cm | | 45 |

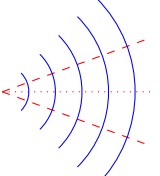
| <code>\draw[decorate,decoration={border,amplitude=0.5cm}] (1,1) circle (1);</code> | | |
|---|---|---|
| | | |
| amplitude =0.5cm | segment length =1cm , amplitude =0.5cm | angle =90 , amplitude =0.5cm |

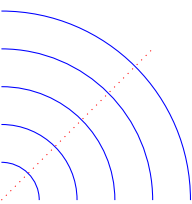
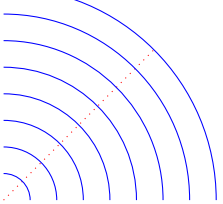
18.2.2 “brace”

| | |
|--|---|
| | <code>\draw [decorate,decoration=brace] (0,0) - - (3,1);</code> |
|--|---|

| <code>\draw[decorate,decoration={brace,amplitude=0.5cm}] (1,1) circle (1); ;</code> | | | |
|--|---|---|---|
| | | | |
| amplitude =0.5cm | aspect =0.65 , amplitude = 0.5cm | raise = 0.25cm , amplitude = 0.5cm | mirror , amplitude = 0.5cm |
| Par défaut : : 2.5 | Par défaut : : 0.5 | Par défaut : : 0 | |

18.2.3 "expanding waves"

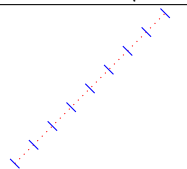
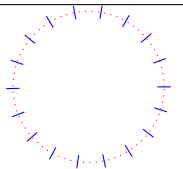
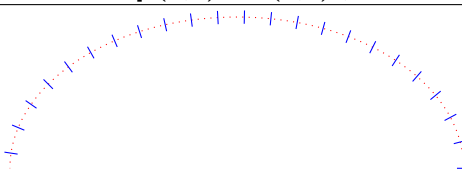
| | |
|---|---|
|  | <pre>\draw [dashed,red](0,0) -- (20:2) ; \draw [dashed,red](0,0) -- (-20:2) ; \draw [decorate,decoration={expanding waves}](0,0) -- (2,0) ;</pre> |
|---|---|

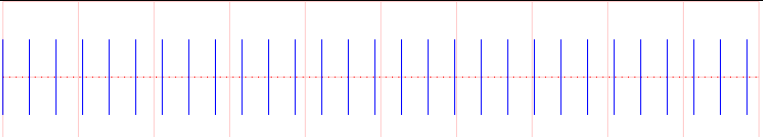

| \draw[decorate,decoration= {expanding waves,segment length=0.5cm}] (1,1) circle (1); | |
|--|--|
|  |  |
| segment length=0.5cm | angle=45 |
| Par défaut : : 10pt | Par défaut : : 20 |

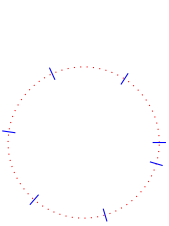
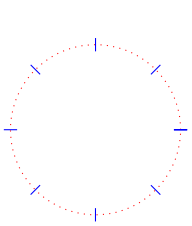
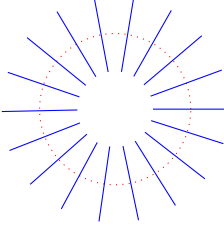
18.2.4 "moveto"

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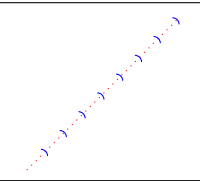
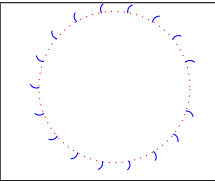
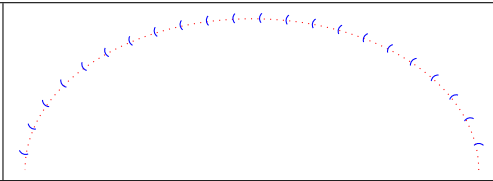
18.2.5 "ticks"

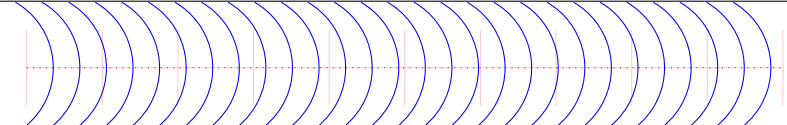
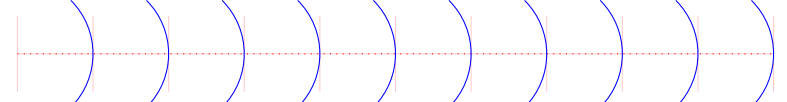
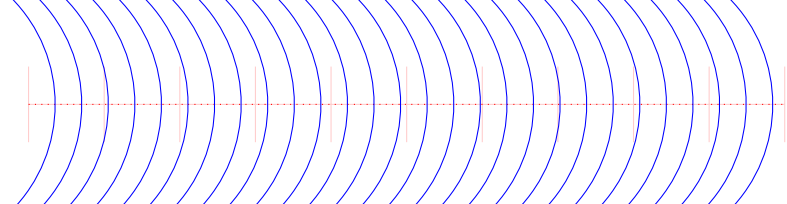
| \draw[decorate,decoration=ticks] (0,0) -- (2,2) ; | | |
|---|---|--|
|  |  |  |
| (0,0) -- (2,2) | (1,1) circle (1) | (0,0) arc (0:180:3 and 2) |

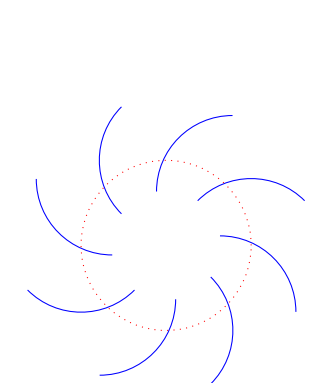
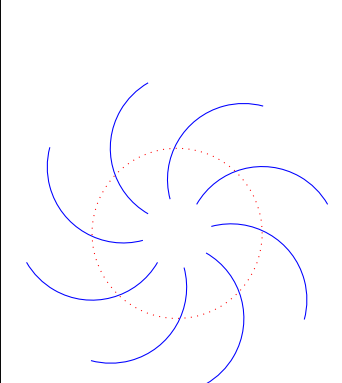
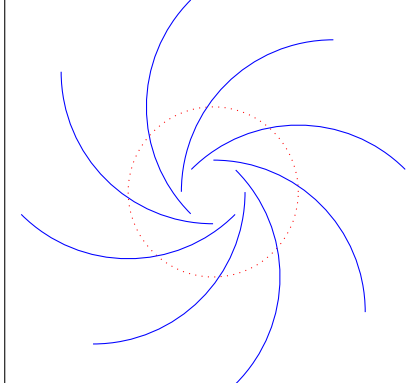
| \draw[decorate,decoration={ticks,amplitude=0.5cm}] (0,0) -- (10,0); | | Par défaut : |
|---|--|--------------|
| amplitude=0.5cm |  | 2.5 pt |
| segment length=1cm |  | 10 pt |

| \draw[decorate,decoration= {ticks,segment length=1cm}] (1,1) circle (1); | | |
|---|---|--|
|  |  |  |
| segment length=1cm (1,1) circle (1) | segment length=pi*8 (1,1) circle (32pt) | amplitude=0.5cm (1,1) circle (1) |

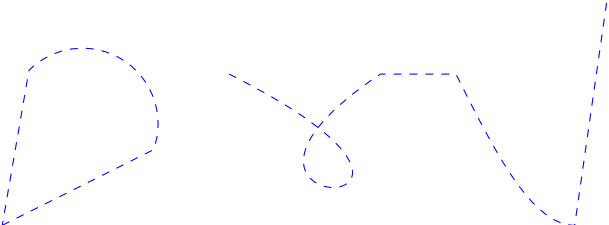
18.2.6 "waves"

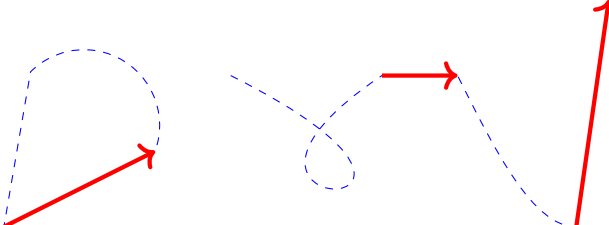
| \draw[decorate,decoration=waves] (0,0) - - (2,2) ; | | |
|---|---|--|
|  |  |  |
| (0,0) - - (2,2) | (1,1) circle (1) | (0,0) arc (0:180:3 and 2) |

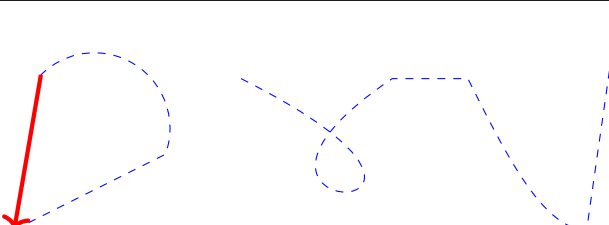
| \draw[decorate,decoration={waves,angle=60,radius=1cm}] (0,0) - - (10,0); | | Par défaut : |
|--|---|--------------|
| angle=60 |  | 45 |
| segment length=1cm |  | 10 pt |
| radius=2cm |  | 10 pt |

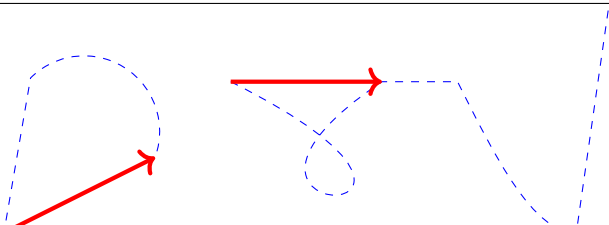
| \draw[decorate,decoration= {waves,segment length=pi*8, radius=1cm}] (1,1) circle (32pt); | | |
|--|---|--|
|  |  |  |
| segment length = pi*8 | angle=60 , segment length = pi*8 | radius=2cm , segment length = pi*8 |

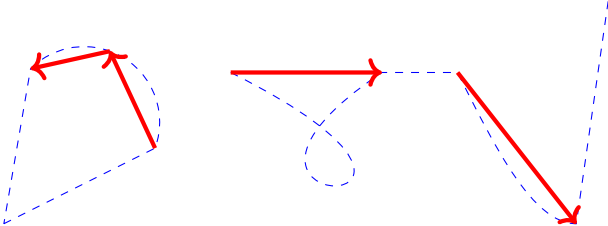
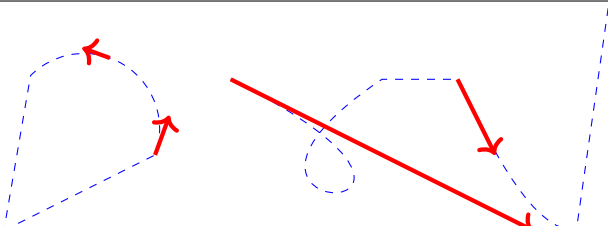
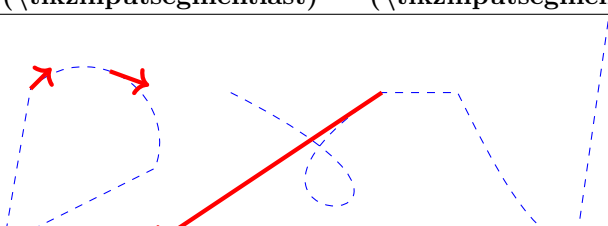
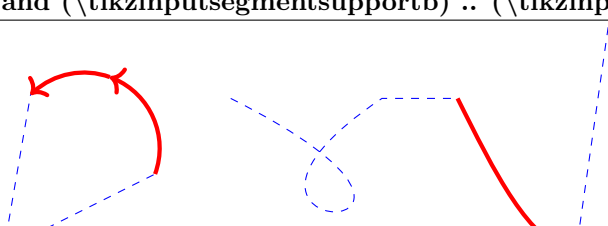
18.2.7 “show path construction”

| <i>Chemin à décorer</i> |
|--|
| <pre>\draw [blue,dashed] (0,0) - - (2,1) arc (-20:135:1) - - cycle (3,2) .. controls (7,0) and (2,0) .. (5,2) - - (6,2) sin (7.57,0) - - (8,3) ;</pre> |
|  |

| composantes linéaires : “lineto” |
|---|
| <pre>decoration={ show path construction, lineto code={ \draw [red,ultra thick,->] (\tikzinputsegmentfirst) - - (\tikzinputsegmentlast); },}</pre> |
|  |

| Fermetures de chemin : “closepath” |
|--|
| <pre>decoration={ show path construction, closepath code={ \draw [red,ultra thick,->] (\tikzinputsegmentfirst) - - (\tikzinputsegmentlast); },}</pre> |
|  |

| coupure de chemin : “moveto” |
|---|
| <pre>decoration={ show path construction, moveto code={ \draw [red,ultra thick,->] (\tikzinputsegmentfirst) - - (\tikzinputsegmentlast); },}</pre> |
|  |

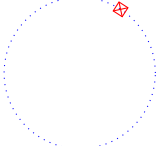
| | |
|--|--|
| composants courbes : “curveto” | |
| <pre>decoration={ show path construction, curveto code={ \draw [red,ultra thick,->] (\tikzinputsegmentfirst) - - (\tikzinputsegmentlast); },}</pre> | |
|  | |
| <pre>decoration={ show path construction, curveto code={ \draw [red,ultra thick,->] (\tikzinputsegmentfirst) - - (\tikzinputsegmentsupporta); },}</pre> | |
|  | |
| <pre>decoration={ show path construction, curveto code={ \draw [red,ultra thick,->] (\tikzinputsegmentlast) - - (\tikzinputsegmentsupportb); },}</pre> | |
|  | |
| <pre>decoration={ show path construction, curveto code={ \draw [red,ultra thick,->] (\tikzinputsegmentfirst) .. controls (\tikzinputsegmentsupporta) and (\tikzinputsegmentsupportb) .. (\tikzinputsegmentlast) ; },}</pre> | |
|  | |
| <pre>.. controls (7,0) and (2,0) .. (5,2)</pre> | |
| ne fonctionne pas ! | |

18.3 Library “decorations.markings”

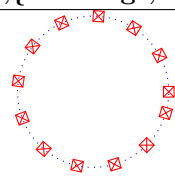
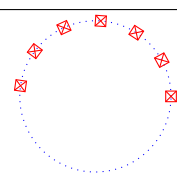
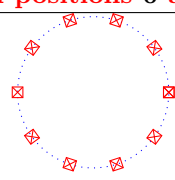
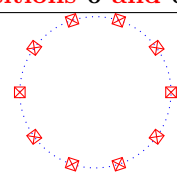
Charger l'extension: `\usetikzlibrary{decorations.markings}`

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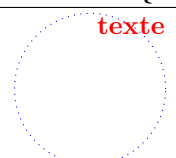
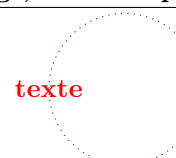
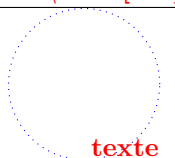
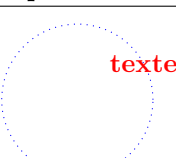
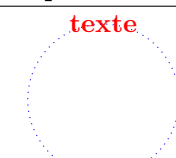
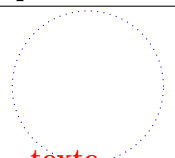
18.3.1 Sa marque à une position

| | |
|--|---|
| <code>\draw [decorate,decoration={markings,mark=at position 1cm with { \draw[red] (-2pt,-2pt) - - (2pt,2pt); \draw[red](2pt,-2pt) - - (-2pt,2pt); \draw[red] (-2pt,-2pt) rectangle (2pt,2pt); }}] (1,1) circle (1);</code> |  |
|--|---|

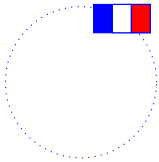
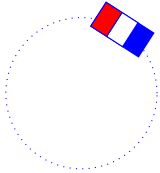
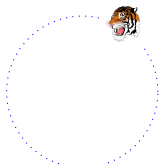
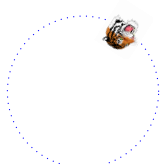
18.3.2 Ses marques : origine, fin et pas

| | |
|--|---|
| <code>\draw[decorate,{markings,mark=between positions 0 and 1 step 5mm with ... }] (1,1) circle (1);;</code> | |
|  |  |
| mark=between positions 0 and 1 step 5mm | between positions 0 and 0.5 step 5mm |
|  |  |
| mark= between positions 0 and 1 step 1/10 | between positions 0 and 1 step 0.1 |

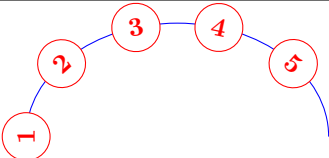
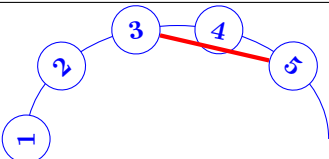
18.3.3 Marque avec un nœud contenant du texte

| | | |
|---|---|---|
| <code>decoration={markings,mark=at position 1cm with \node[red]{texte}}</code> | | |
|  |  |  |
| at position 1cm | at position 0.5 | at position -1cm |
|  |  |  |
| at position 1cm/2 | at position 0.5/2 | at position -0.5/2 |


18.3.4 Marque avec un nœud contenant une image

| | |
|--|---|
| <code>\draw [decorate,decoration={markings,mark=at position 1cm with \node{\DFR};}] (1,1) circle (1);</code> | |
|  |  |
| <code>\node{\DFR}</code> | <code>\node[transform shape]{\DFR}</code> |
|  |  |
| <code>\node{\includegraphics[width=0.5cm]{tiger} }</code> | <code>\node[transform shape]{\includegraphics[width=0.5cm]{tiger} }</code> |

18.3.5 Numérotation des marques et affectation d'un nom

| | |
|---|--|
|  | <code>decoration={markings,</code> <code>mark=between positions 0 and 1 step 0.2</code> <code>with { \node [draw , circle ,fill=white, name=</code> <code>marque-\pgfkeysvalueof{/pgf/decoration/mark info/sequence</code> <code>number},</code> <code>transform shape]</code> <code>{\pgfkeysvalueof{/pgf/decoration/mark info/sequence num-</code> <code>ber}};}</code> |
|  | <code>\draw [red,ultra thick] (marque-3) - - (marque-5);</code> |

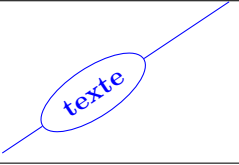
18.3.6 Distance des nœuds

| | |
|---|--|
|  | |
| <code>decoration={markings,</code> <code>mark=between positions 0 and 1 step 40pt with</code> <code>{ \node [red,draw,ellipse,fill=white,font=\tiny]</code> <code>{\pgfkeysvalueof{/pgf/decoration/mark info/distance from start} };} }</code> | |

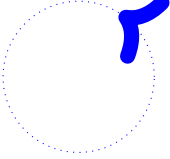
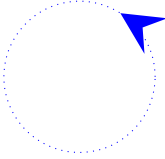
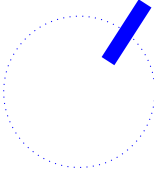
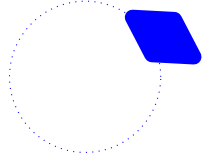
`/pgf/decoration/reset marks` (no value)

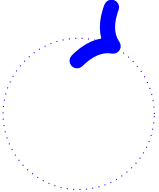
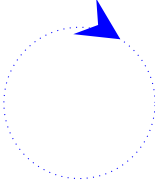
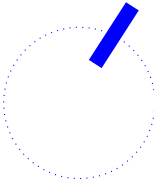

`/pgf/decoration/mark connection node=node name` (no default, initially empty)

18.3.7 Nœud sur une liaison

| | |
|---|---|
|  | <pre>\draw [decorate,decoration={markings, mark connection node=mon noeud,mark=at position 0.4 with {\node [draw,ellipse,blue,transform shape] (mon noeud) {texte}};}] (0,0) -- (3,2) ;</pre> |
|---|---|

18.3.8 Arrow Tip Markings

| | | | |
|--|---|---|--|
| <pre>\draw[decorate,decoration={ markings,mark=at position 1cm with {\arrow[blue,line width=2mm]{>}};}] (1,1) circle (1);</pre> | | | |
|  |  |  |  |
| {>} | {stealth } | { } | {diamond} |
| Autres possibilités et paramètres voir page 20 et suivantes | | | |

| | | | |
|---|---|---|--|
| <pre>\draw[decorate,decoration={markings,mark=at position 1cm with {\arrowreversed[blue,line width=2mm]{>}};}] (1,1) circle (1);</pre> | | | |
|  |  |  |  |
| {>} | {stealth } | { } | {diamond} |

18.4 Library “decorations.footprints”

Charger l'extension: `\usetikzlibrary{decorations.footprints}`

PGFmanual section : 48-5-2

| |
|--|
| <code>\tikz \draw[decorate,decoration=footprints] (0,0) - (10,0);</code> |
| |

| | | | |
|---|---|-----------------------|-----------------------------------|
| <code>\draw[decorate,decoration={footprints,foot of = gnome}] (0,2.5) - - (3,2.5);</code> | | | |
| | | | |
| foot of = gnome | foot of = human (Par défaut :) | foot of = bird | foot of = felis silvestris |

| | | | |
|---|------------------------|-----------------------|-----------------------------------|
| <code>\fill[decorate,decoration={footprints,foot of = gnome}] (0,2.5) - - (3,2.5);</code> | | | |
| | | | |
| foot of = gnome | foot of = human | foot of = bird | foot of = felis silvestris |

| | |
|--|---|
| <code>\fill[decorate,decoration={footprints,foot length=20pt}] (0,2.5) - - (3,2.5);</code> | |
| | |
| foot length=1cm Par défaut : : 10pt | stride length=2cm Par défaut : : 30pt |
| | |
| foot sep=1cm Par défaut : : 4pt | foot angle = 45 Par défaut : : 10 |

| | | | |
|--|------------------------|-----------------------------------|--------------------------|
| <code>\fill[decorate,decoration={footprints,foot length=20pt}] (0,2.5) - - (3,2.5);</code> | | | |
| | | | |
| foot length=20pt | foot length=1cm | stride length=15pt | stride length=2cm |
| Par défaut : : foot length=10pt | | Par défaut : : stride length=30pt | |
| | | | |
| foot sep=10pt | foot sep=1cm | foot angle = -45 | foot angle = 45 |
| Par défaut : : foot sep=4pt | | Par défaut : : foot angle=10 | |

18.5 Library “decorations.shapes”

18.5.1 Introduction

Charger l’extension: `\usetikzlibrary{decorations.shapes}`

PGFmanual section : 48-5-3









| | | |
|--|-------------------|--------------------------|
| \draw[decorate,decoration=crosses] (0,0) - - (3,0); | | |
| x x x x x x x x x | ▷ ▷ ▷ ▷ ▷ ▷ ▷ ▷ ▷ | o o o o o o o o o o o |
| crosses | triangles | shape backgrounds |



| | |
|--|---------------------|
| \draw[decorate,decoration={crosses,segment length=1cm}](0,0) - - (10,0); | |
| segment length = 1cm | x x x x x x x x x x |
| shape width = 1cm | |
| shape height = 1cm | |
| shape size = 1cm | |
| Par défaut : : shape width = shape height = 2.5pt | |



18.5.2 “shape backgrounds”


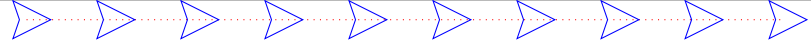
| | | | |
|---|------------------------|------------------|-------------------------|
| \draw[decorate with=dart] (0,2.5) - - (3,2.5); | | | |
| ▷▷▷▷▷▷▷▷▷▷▷▷▷▷ | ◇◇◇◇◇◇◇◇◇◇◇◇◇◇ | □□□□□□□□□□□□ | o o o o o o o o o o o o |
| dart | diamond | rectangle | circle |
| ☆☆☆☆☆☆☆☆☆☆☆☆ | ◇◇◇◇◇◇◇◇◇◇◇◇◇◇ | ◇◇◇◇◇◇◇◇◇◇◇◇◇◇ | ▽▽▽▽▽▽▽▽▽▽▽▽▽▽ |
| star | regular polygon | signal | kite |
| Autres possibilités et paramètres voir page 80 et suivantes | | | |

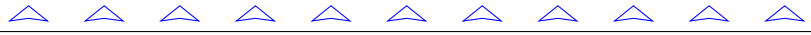


| | |
|---|---|
| Formes disponibles | |
| <i>Syntaxe</i> | \draw[decorate,decoration={ shape backgrounds ,shape=dart, shape size=.5cm,shape sep=1cm}] (0,0) - - (10,0); |
| <i>Autre syntaxe</i> | \draw[decorate with =dart,decoration={shape size=.5cm,shape sep=1cm}] (0,0) - - (10,0); |
| dart | |
| rectangle | |
| cloud | |
| star | |
| starburst | |
| tape | |
| kite | |
| signal | |
| Par défaut : : shape= circle | |
| Autres possibilités voir page 80 et suivantes | |

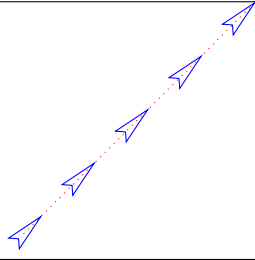
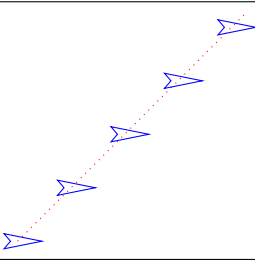
| Paramètres | | | |
|--|---|---|---|
| \draw[decorate with=star,star points=3,decoration={shape size=.5cm,shape sep=1cm}](0,2.5) - - (3,2.5); | | | |
|  |  |  |  |
| star points=3 | star points=4 | star points=5 | star points=8 |
| \draw[decorate with=star,paint=green,decoration={shape size=.5cm,shape sep=1cm}](0,2.5) - - (3,2.5); | | | |
|  |  |  |  |
| paint=green | double | ultra thick | star point ratio = 3 |

| Espacement | |
|---|--|
| \draw[decorate with=dart,decoration={shape size=.5cm,shape sep=1cm}](0,2.5) - - (10,2.5); | |
| shape sep={1cm} |  |
| shape sep={2cm} |  |
| Par défaut : : shape sep= 0.25cm | |

| Type d'espacement | |
|---|--|
| \draw[decorate with=dart,decoration={shape size=.5cm,shape sep={1cm,between centers}}](0,2.5) - - (10,2.5); | |
| between centers |  |
| between borders |  |
| Par défaut : : between centers | |

| Espacement automatique | |
|---|--|
| \draw[decorate with=dart,decoration={shape size=.5cm,shape evenly spread=5}](0,0) - - (10,0); | |
| shape evenly spread=5 |  |
| shape evenly spread=10 |  |

| Orientation : " shape border rotate " | |
|---------------------------------------|--|
| shape border rotate=90 |  |
| shape border rotate=45 |  |
| shape border rotate=180 |  |

| "shape sloped" | |
|---|---|
| \draw[decorate with=dart,decoration={shape width=.5cm,shape sep=1cm,shape sloped=true}](0,0) - - (3,3); | |
|  |  |
| shape sloped=true | shape sloped=false |
| Par défaut : : shape sloped=true | |

| | |
|---|--------------------|
| $\backslash\text{draw}[\text{decorate with}=\text{dart},\text{decoration}=\{\text{shape width}=.5\text{cm},\text{shape sep}=1\text{cm},$ $\text{shape sloped}=\text{true}\}] (0,0) \text{ arc } (0:180:3 \text{ and } 2);$ | |
| | |
| shape sloped=true | shape sloped=false |
| Par défaut : : shape sloped=true | |

| | |
|--|--------------------|
| $\backslash\text{draw}[\text{decorate with}=\text{dart},\text{decoration}=\{\text{shape width}=.5\text{cm},\text{shape sep}=1\text{cm},$ $\text{shape border rotate}=90,\text{shape sloped}=\text{true} \}] (0,0) - - (3,3);$ | |
| | |
| shape sloped=true | shape sloped=false |

| | |
|--|------|
| “shift only” | |
| decoration= transform={shift only} ,shape width=5mm,segment length=.5cm,shape sep=1cm | |
| | |
| avec | sans |

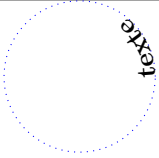
| | |
|---|--|
| Dimensions | |
| $\backslash\text{draw}[\text{decorate with}=\text{dart},\text{decoration}=\{\text{shape size}=.5\text{cm},$ $\text{shape height}=1\text{cm} \}] (0,0) - - (10,0);$ | |
| shape height=1cm | |
| shape width=1cm | |
| shape size=1cm | |


| | |
|--|--|
| $\backslash\text{draw}[\text{decorate with}=\text{dart},\text{decoration}=\{\text{shape size}=.5\text{cm},$ $\text{shape start size}=1\text{cm},\text{shape scaled }\}\] (0,2.5) - - (10,2.5);$ | |
| shape start size=1cm | |
| shape start height=1cm | |
| shape start width=1cm | |
| shape end size=1cm | |
| shape end height=1cm | |
| shape end width=1cm | |


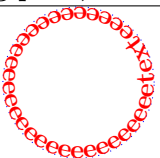
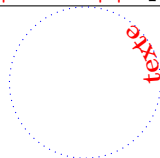
18.6 Library “decorations.text”


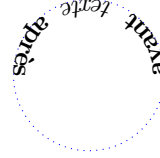

Charger l’extension: `\usetikzlibrary{decorations.text}`


PGFmanual section : 48-6

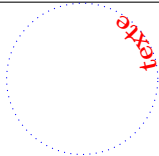
| |
|--|
| <code>\draw[decorate,decoration={text along path,text={texte}}] (1,1) circle (1);</code> |
|  |

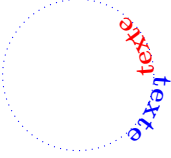
| |
|--|
| Texte trop long |
| <code>\draw[decorate,decoration={text along path, text={Un Deux Trois Quatre Cinq Six sept Huit Neuf Dix}}] (1,1) circle (1);</code> |
|  |

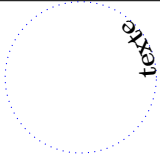
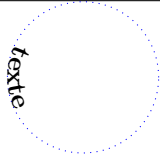
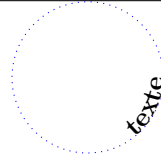
| Format du texte | | |
|--|--|--|
| \draw [decorate,decoration={text along path, text=avant \red texte après }] | | |
|  |  |  |
| text={avant \red texte après } | text={ \red texte } | text={ \red texte {} } |

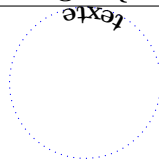
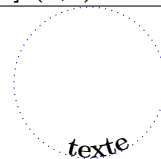
| | | |
|---|---|--|
|  |  |  |
| <code>avant \red texte après</code> | <code>avant \it texte après</code> | <code>avant \Huge texte après</code> |

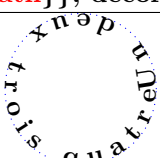
| |
|---|
| <code>\draw [decorate,decoration={text along path, text={avant \Large Visual + \bf\color{red} Tikz après }}] (1,1) circle (1);</code> |
|  |

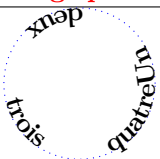
| |
|--|
| <code>\draw [decorate,decoration={text along path,text format delimiters={ } }, text={ [\red] texte [] }] (1,1) circle (1);</code> |
|  |

| Sens du texte |
|---|
| <code>\draw[decorate,decoration={text along path,text={texte}, text color=blue, reverse path }] (1,1) circle (1);</code> |
|  |

| Position du texte |
|---|
| <code>\draw[decorate,decoration={ text along path,text={texte}, text align={align=left} }] (1,1) circle (1);</code> |
|    |
| <code>align={align=left }</code> <code>align={align=center }</code> <code>align={align=right }</code> |

| |
|---|
| <code>\draw[decorate,decoration={text along path,text={texte}, text align={align=left,left indent=1cm } }] (1,1) circle (1);</code> |
|   |
| <code>align={align=left,left indent=1cm}</code> <code>align={align=right,right indent=1cm}</code> |

| Justification du texte |
|---|
| <code>\draw [decoration={text along path, text={Un deux trois quatre }, text align={fit to path}}, decorate] (1,1) circle (1);</code> |
|  |

| Justification des espaces |
|--|
| <code>\draw [decoration={text along path, text={Un deux trois quatre }, text align={fit to path stretching spaces}}, decorate] (1,1) circle (1);</code> |
|  |

18.7 Library “decorations.fractals”

Charger l'extension: `\usetikzlibrary{decorations.fractals}`

PGFmanual section : 48-7

| <code>\draw[decorate,decoration=Koch curve type 1] (0,0) - - (3,0);</code> | | | |
|--|-------------------|----------------|------------|
| | | | |
| Koch curve type 1 | Koch curve type 2 | Koch snowflake | Cantor set |

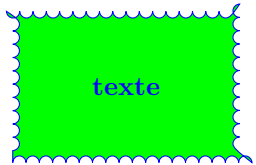
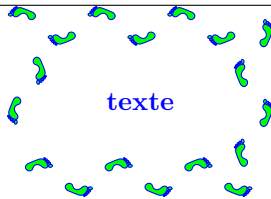
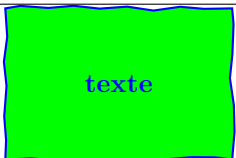



| <code>\begin{tikzpicture}[decoration=Koch curve type 1]</code> <code>\draw decorate { decorate { (0,0) - (3,0) } };</code> <code>\end{tikzpicture}</code> | | | |
|---|-------------------|----------------|------------|
| | | | |
| Koch curve type 1 | Koch curve type 2 | Koch snowflake | Cantor set |

| <code>\draw decorate { decorate { decorate { (0,0) - - (3,0) } } };</code> | | | |
|--|-------------------|----------------|------------|
| | | | |
| Koch curve type 1 | Koch curve type 2 | Koch snowflake | Cantor set |

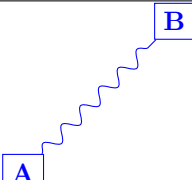
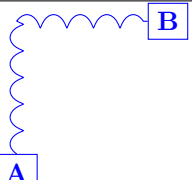
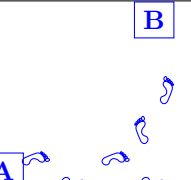
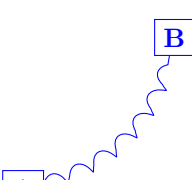
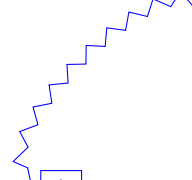
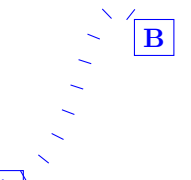
| | | | |
|------|------------|------------|------------|
| | | | |
| sans | 1 decorate | 2 decorate | 3 decorate |

18.8 Applications

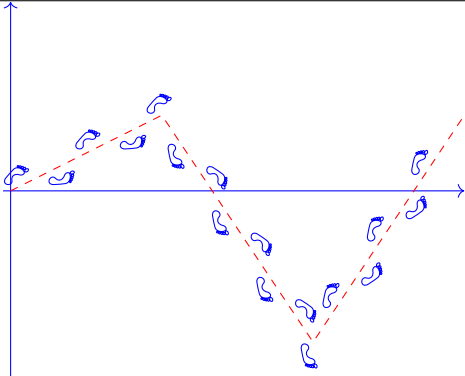
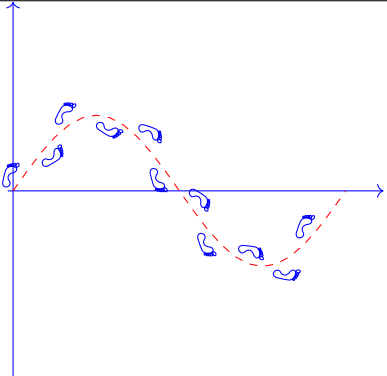
18.8.1 Décoration d'un nœud

| | |
|--|---|
| \node [draw,decorate,decoration={bumps, minimum height=2cm, minimum width=3cm}] {texte}; | |
|  |  |
| decoration= bumps | decoration= footprints |
|  |  |
| decoration={random steps , amplitude = 1pt } | starburst,decoration={random steps, segment length=3pt , amplitude=2pt } |
|  |  |
| ellipse,decoration=zigzag | decoration= {text along path,text= {Un Deux Trois Quatre Cinq Six Sept Huit Neuf} } |

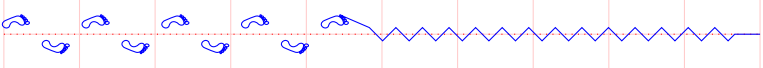
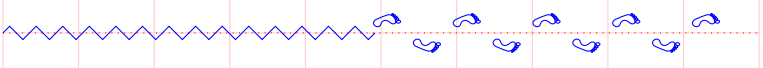

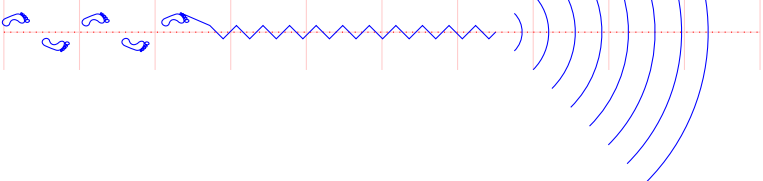
18.8.2 Décoration de liaisons de noeuds

| | | |
|---|---|--|
| \draw [decorate,decoration=sake](A) – (B); | | |
|  |  |  |
| decoration=sake (A) - - (B) | decoration=coil (A) - (B) | decoration=footprints (A) - (B) |
|  |  |  |
| decoration=coil (A) to [bend right] (B) | decoration=zigzag (A) to[bend left=120] (B) | decoration=ticks (A) to[out=30] (B) |

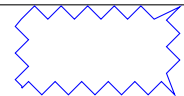
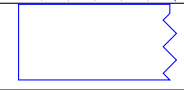


18.8.3 Décoration d'un graphe

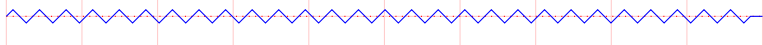

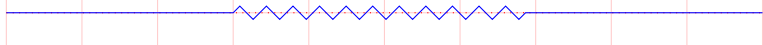
| | |
|---|--|
| <code>\draw [decorate,decoration=footprints] plot coordinates (0,0) (2,1) (4,-2) (6,1) ;</code> | |
|  |  |
| plot coordinates (0,0) (2,1) (4,-2) (6,1) | plot (\x,{sin(\x r)}) |



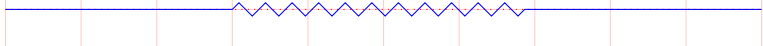
18.8.4 Décorations variables

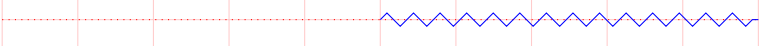

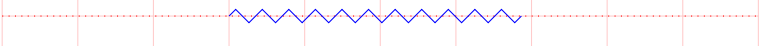
| | |
|---|--|
| <code>\draw [decorate, decoration={zigzag,pre=footprints,pre length=5cm}](0,0) – (10,0);</code> | |
|  | |
| <code>decoration={zigzag,pre=footprints,pre length=5cm}</code> | |
|  | |
| <code>decoration={zigzag,post=footprints,post length=5cm}</code> | |
|  | |
| <code>decoration={zigzag,pre=footprints,pre length=3cm, ,post=expanding waves,post length=3cm}</code> | |
|  | |

18.8.5 Décoration partielle

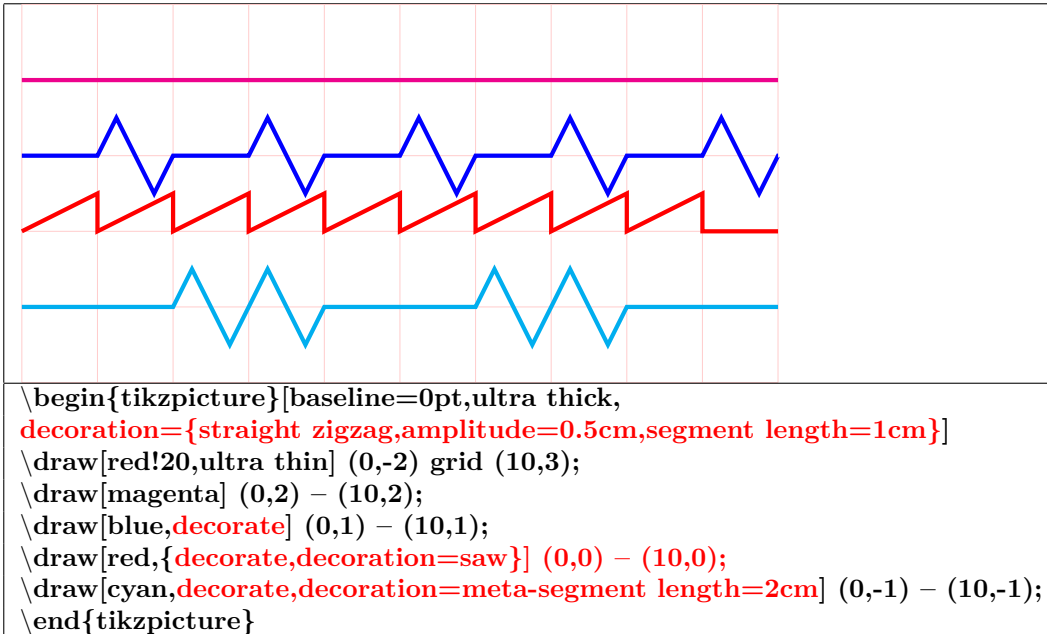
| | |
|---|---|
|  | <code>\draw [decorate,decoration=zigzag] (0,0) – (2,0) – (2,1) – (0,1)– cycle;</code> |
|  | <code>\draw [decoration=zigzag] (0,0) – (2,0) decorate{– (2,1)} – (0,1)– cycle;</code> |
|  | <code>\draw [decorate,decoration=zigzag] (0,0) – (2,0) – (2,1) – decorate{(0,1)}– cycle;</code> |
|  | <code>\draw [decorate,decoration=zigzag] (0,0) decorate{– (2,0)} – (2,1) – decorate{(0,1)}– cycle;</code> |

| |
|--|
| “lineto” \draw [decorate, decoration={zigzag,lineto, pre length=5cm }] (0,0) – (10,0); |
|  |
| decoration={ zigzag, pre=lineto , pre length=5cm } |
|  |
| decoration={zigzag, post=lineto , post length=5cm } |
|  |
| decoration={zigzag, pre=lineto , pre length=3cm , , post=curveto , post length=3cm } |

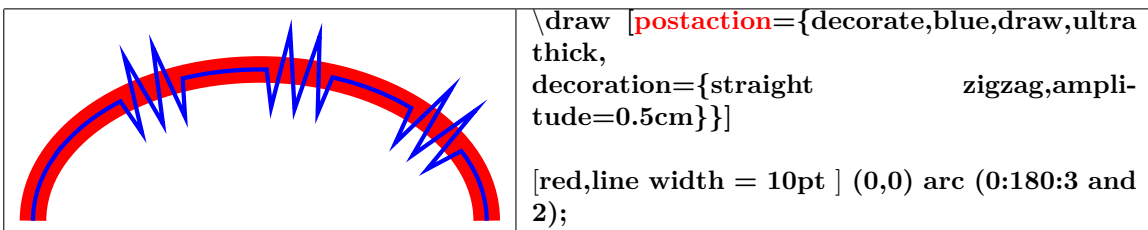
| |
|---|
| “curveto” |
| \draw [decorate, decoration={zigzag, pre=curveto , pre length=5cm }] (0,0) – (10,0); |
|  |
| decoration={zigzag, pre=curveto , pre length=5cm } |
|  |
| decoration={zigzag, post=curveto , post length=5cm } |
|  |
| decoration={zigzag, pre=curveto , pre length=3cm , , post=curveto , post length=3cm } |

| |
|---|
| “moveto” |
| \draw [decorate, decoration={zigzag, pre=moveto , pre length=5cm }] (0,0) – (10,0); |
|  |
| decoration={zigzag, pre=moveto , pre length=5cm } |
|  |
| decoration={zigzag, post=moveto , post length=5cm } |
|  |
| decoration={zigzag, pre=moveto , pre length=3cm , , post=moveto , post length=3cm } |

18.8.6 Paramètres globaux ou particuliers

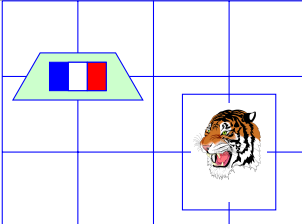


18.8.7 Tracer le chemin et sa décoration avec “Postaction”

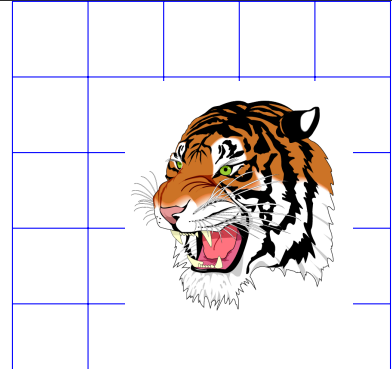


19 Insertion images dans un environnement TikZ

19.0.1 Dans un noeud

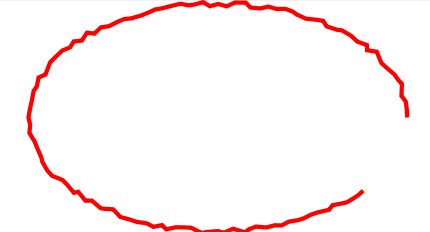
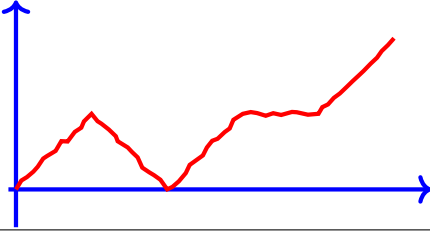
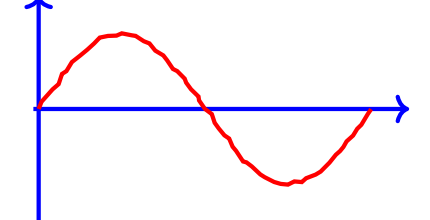
| | |
|---|---|
|  | <pre> \begin{tikzpicture} \draw (0,0) grid (5,3); \node [fill=green!20,trapezium,draw] at (1,2) {\DFR }; 77 \node [draw] at (3,1) {\includegraphics[width=1cm]{tiger} }; \end{tikzpicture} </pre> |
|---|---|

19.0.2 En déclarant l'image dans pgf

| | |
|--|--|
|  | <pre> \pgfdeclareimage[width=3cm]{ttt}{tiger} \begin{tikzpicture} \draw (0,0) grid (5,5); \draw (3,2) node {\pgfuseimage{ttt}} ; \end{tikzpicture} </pre> |
|--|--|

20 Trait à main levée

voir page 96

| | |
|---|--|
|  | <pre> \draw[decorate,decoration={random steps, amplitude=1pt,segment length=3pt}] (0,0) arc (0:320:2.5 and 1.5); </pre> |
|  | <pre> \draw[decorate,decoration={random steps, amplitude=1pt,segment length=3pt}] plot coordinates (0,0) (1,1) (2,0) (3,1) (4,1) (5,2); </pre> |
|  | <pre> \draw[decorate, decoration={random steps, amplitude=1pt,segment length=3pt}] plot (\x,\sin(\x r)); </pre> |

21 Effets spéciaux

21.1 Le peuple TikZ














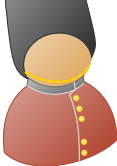












Charger l'extension: `\usepackage{tikzpeople}` [4] ^a

^a conflit `\usetikzlibrary{patterns}` page 16 : placer cette commande en premier






`\tikz \node[alice] at (0,0) ;`




21.1.1 Personages disponibles

| \tikz \node[alice,minimum size=1.5cm] at (0,0) ; | | | | | | |
|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |
| alice | bob | bride | builder | businessman | charlie | chef |
|  |  |  |  |  |  |  |
| conductor | cowboy | criminal | dave | graduate | groom | guard |
|  |  |  |  |  |  |  |
| jester | judge | mexican | nun | nurse | physician | pilot |
|  |  |  |  |  | | |
| police | priest | sailor | santa | surgeon | | |





21.1.2 Options


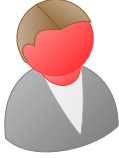


| | | | | |
|---|---|---|---|---|
| <code>\tikz \node[businessman,evil,minimum size=1.5cm] at (0,0) ;</code> | | | | |
|  |  |  |  |  |
| evil | female | good | mirrored | monitor |






21.1.3 Point d'ancrage spécifique






| | |
|---|---|
|  | <pre> \begin{tikzpicture}[blue] \node[name=a,shape=bob,minimum size=1.5cm] {}; \node at (1.25,.5) [ellipse callout, draw, callout absolute pointer{(a.mouth)}, font=\tiny] Hey!; \end{tikzpicture} </pre> |
|---|---|






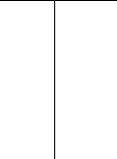
21.1.4 Couleurs





| | | | |
|--|--|--|--|
| <code>\tikz \node[alice,hair=red,minimum size=1.5cm] at (0,0) ;</code> | | | |
|  |  |  |  |
| hair=red | skin=red | shirt=red | details=red |






| | | | |
|---|---|---|---|
| <code>\tikz \node[bob,hair=red,minimum size=1.5cm] at (0,0) ;</code> | | | |
|  |  |  |  |
| hair=red | skin=red | shirt=red | details=red |










| | | | | |
|---|---|---|---|---|
| <code>\tikz \node[bride,hair=red,minimum size=1.5cm] at (0,0) ;</code> | | | | |
|  |  |  |  |  |
| hair=red | skin=red | shirt=red | pearls=red | veil=red |

| | | | | |
|---|---|---|---|---|
| <code>\tikz \node[builder,hair=red,minimum size=1.5cm] at (0,0) ;</code> | | | | |
|  |  |  |  |  |
| hair=red | skin=red | shirt=red | trousers=red | hat=red |

| \tikz \node[businessman , hair =red,minimum size=1.5cm] at (0,0) ; | | | | | |
|---|---|---|---|---|--|
|  |  |  |  |  |  |
| hair =red | skin =red | shirt =red | tie =red | undershirt =red | monogram =red |

| \tikz \node[charlie , hair =red,minimum size=1.5cm] at (0,0) ; | | | |
|---|---|---|---|
|  |  |  |  |
| hair =red | skin =red | shirt =red | buttons =red |

| \tikz \node[chef , hair =red,minimum size=1.5cm] at (0,0) ; | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| hair =red | skin =red | shirt =red | hat =red | details =red |

| \tikz \node[conductor , hair =red,minimum size=1.5cm] at (0,0) ; | | | | |
|---|---|---|---|--|
|  |  |  |  |  |
| hair =red | skin =red | shirt =red | hat =red | hatshield =red |
|  |  |  |  | |
| undershirt =red | shirt =red | hatbadge =red | badge =red | |

| | | | |
|--|-----------|---------------|----------|
| \tikz \node[cowboy, hair=red, minimum size=1.5cm] at (0,0) ; | | | |
| | | | |
| hair=red | skin=red | shirt=green | hat=red |
| | | | |
| patches=red | tie=green | stitching=red | vest=red |

| | | | |
|---|----------|-----------|-------------|
| \tikz \node[criminal, hat=red, minimum size=1.5cm] at (0,0) ; | | | |
| | | | |
| hat=red | skin=red | shirt=red | details=red |

| | | | | |
|--|----------|-----------|------------------|-----------|
| \tikz \node[dave, hair=red, minimum size=1.5cm] at (0,0) ; | | | | |
| | | | | |
| hair=red | skin=red | shirt=red | undershirt=green | tie=green |

| | | | | | |
|--|----------|-----------|----------------|-------------|---------|
| \tikz \node[graduate, hair=red, minimum size=1.5cm] at (0,0) ; | | | | | |
| | | | | | |
| hair=red | skin=red | shirt=red | undershirt=red | stripes=red | hat=red |

| | | | | | |
|---|----------|-----------|------------------|-----------|---------|
| \tikz \node[groom, hair=red, minimum size=1.5cm] at (0,0) ; | | | | | |
| | | | | | |
| hair=red | skin=red | shirt=red | undershirt=green | tie=green | hat=red |

| \tikz \node[guard,h at =red,minimum size=1.5cm] at (0,0) ; | | | | | |
|---|----------|-----------|------------|------------|-------------|
| | | | | | |
| hat=red | skin=red | shirt=red | collar=red | lining=red | details=red |

| \tikz \node[jester,h at =red,minimum size=1.5cm] at (0,0) ; | | | | | |
|--|----------|--------------|---------|-----------------------------|--------------|
| | | | | | |
| hair=red | skin=red | shirt=yellow | hat=red | pattern=yellow ² | details=blue |

| \tikz \node[judge,h air =red,minimum size=1.5cm] at (0,0) ; | | | | |
|--|----------|-----------|----------------|----------------|
| | | | | |
| hair=red | skin=red | shirt=red | undershirt=red | hairshadow=red |

| \tikz \node[mexican,h air =red,minimum size=1.5cm] at (0,0) ; | | | | | | |
|--|----------|-----------|-----------|-------------|-------------|----------------|
| | | | | | | |
| hair=red | skin=red | shirt=red | hat=green | ringtop=red | ringmid=red | ringbot=yellow |

| \tikz \node[nun,plaid=red,minimum size=1.5cm] at (0,0) ; | | |
|--|----------|-----------|
| | | |
| plaid=red | skin=red | shirt=red |

| \tikz \node[nurse,h air =red,minimum size=1.5cm] at (0,0) ; | | | | | | |
|--|----------|-----------|-----------------|----------------|-----------|---------------|
| | | | | | | |
| hair=red | skin=red | shirt=red | badgeclip=green | redcross=green | badge=red | badgename=red |






| \tikz \node[physician,hair=red,minimum size=1.5cm] at (0,0) ; | | | | | |
|---|----------|-----------|---------|-----------------|----------|
| | | | | | |
| hair=red | skin=red | shirt=red | hat=red | stethoscope=red | tube=red |


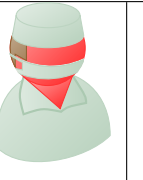
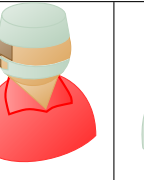
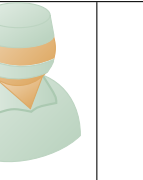
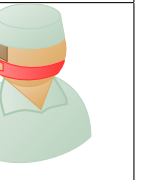
| \tikz \node[pilot,hair=red,minimum size=1.5cm] at (0,0) ; | | | | | | |
|---|----------|-----------|----------------|-----------|------------|----------------|
| | | | | | | |
| hat=red | skin=red | shirt=red | undershirt=red | visor=red | straps=red | decoration=red |

| \tikz \node[police,hair=red,minimum size=1.5cm] at (0,0) ; | | | |
|--|--------------|---------------|----------------|
| | | | |
| hair=red | skin=red | shirt=red | hat=red |
| | | | |
| badge=red | hatbadge=red | hatshield=red | undershirt=red |

| \tikz \node[priest,hair=red,minimum size=1.5cm] at (0,0) ; | | | | | |
|--|----------|-----------|---------|------------|-----------|
| | | | | | |
| hair=red | skin=red | shirt=red | hat=red | collar=red | cross=red |

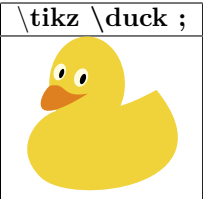
| \tikz \node[sailor,hair=red,minimum size=1.5cm] at (0,0) ; | | | | | | |
|--|----------|-----------|---------|----------------|-------------|-------------|
| | | | | | | |
| hair=red | skin=red | shirt=red | hat=red | undershirt=red | stripes=red | details=red |

| | | | | |
|---|---|---|---|---|
| \tikz \node[santa,h at =green,minimum size=1.5cm] at (0,0) ; | | | | |
|  |  |  |  |  |
| hat=green | skin=green | shirt=green | beard=green | details=green |

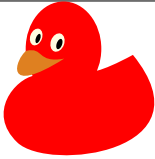

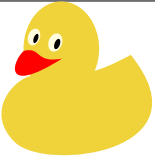
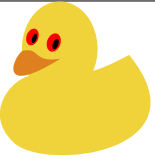
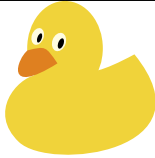
| | | | | |
|---|---|---|---|---|
| \tikz \node[surgeon,h at =red,minimum size=1.5cm] at (0,0) ; | | | | |
|  |  |  |  |  |
| hat=red | skin=red | shirt=red | hair=red | mask=red |



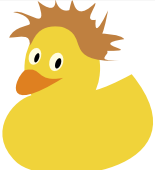





21.2 Ducks


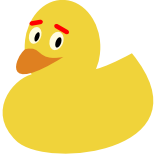


Charger l'extension: `\usepackage{tikzducks}` [5]

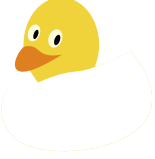
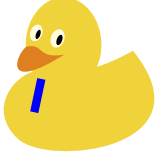
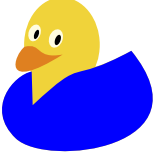

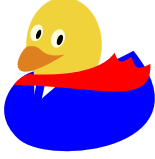

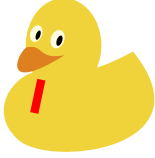

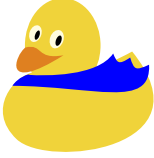


21.2.1 Options







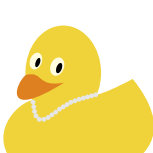





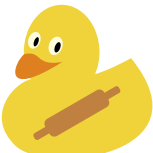


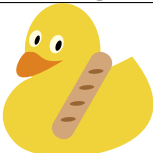


| | | | | |
|---|---|---|---|--|
| <code>\tikz \duck[body=red] ;</code> | | | | <code>\tikz \duck[grumpy] ;</code> |
|  |  |  |  |  |
| <code>[body=red]</code> | <code>[head=red]</code> | <code>[bill=red]</code> | <code>[eye=red]</code> | |

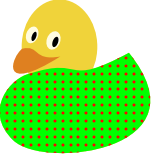
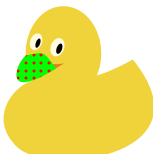
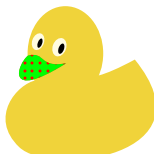
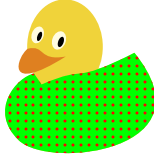
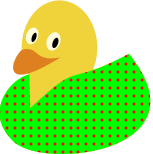
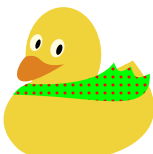





| | | | |
|---|---|---|--|
|  |  |  |  |
| <code>[longhair]</code> | <code>[shorthair]</code> | <code>[crazyhair]</code> | <code>[recedinghair]</code> |
|  |  |  |  |
| <code>[longhair=red]</code> | <code>[shorthair=red]</code> | <code>[crazyhair=red]</code> | <code>[recedinghair=red]</code> |

| | | | |
|---|---|---|---|
|  |  |  |  |
| <code>[eyebrow]</code> | <code>[eyebrow=red]</code> | <code>[beard]</code> | <code>[beard=red]</code> |

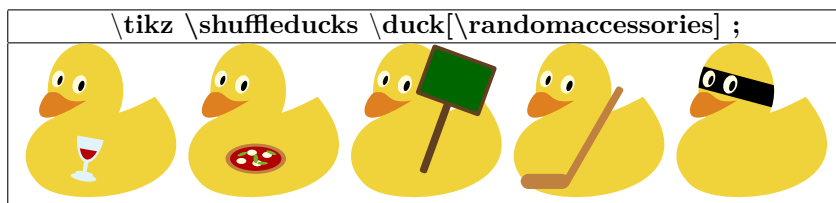
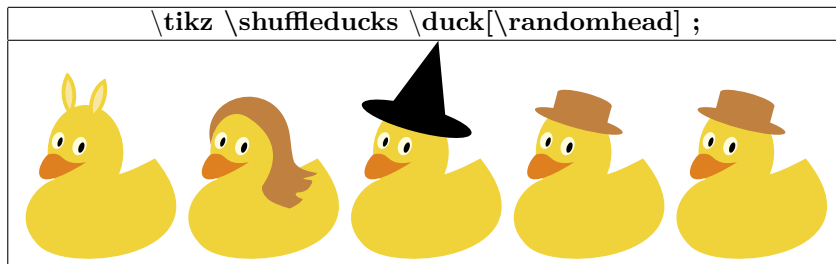
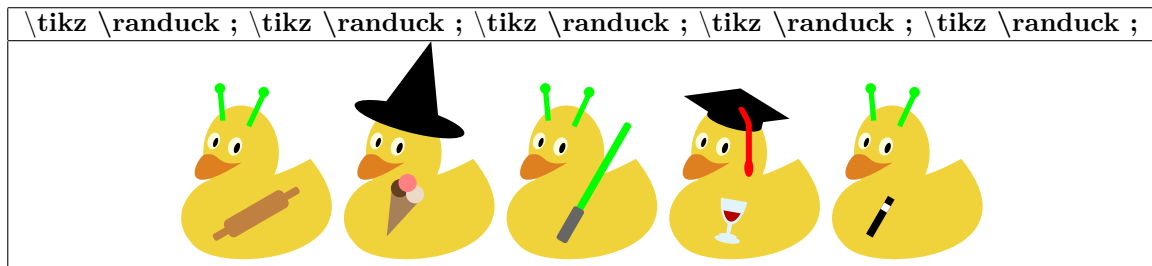
| | | | | |
|---|---|---|---|--|
|  |  |  |  |  |
| <code>[tshirt]</code> | <code>[tie]</code> | <code>[jacket]</code> | <code>[cape]</code> | <code>[tshirt,tie ,jacket ,cape]</code> |
|  |  |  |  | |
| <code>[tshirt=red]</code> | <code>[tie=red]</code> | <code>[jacket=red]</code> | <code>[cape=blue]</code> | |

| | | | | |
|---|---|--|---|---|
|  |  |  |  |  |
| [water] | [alien] | [hat] | [tophat] | [cap] |
|  |  |  |  |  |
| [santa] | [graduate] | [graduate,tassel] | [beret] | [peakedcap] |
|  |  |  |  |  |
| [crown] | [unicorn] | [bunny] | [bunny=red,inear=blue] | [witch] |
|  |  |  |  |  |
| [magicwand] | [magichat] | [magichat, magicstars] | [glasses] | [sunglasses] |
|  |  |  |  |  |
| [mask] | [signpost=42] | [signpost=XXX, signcolour=green] | [signpost=XXX, signback=green] | [speech={XXX}] |
|  |  |  |  | |
| [speech=XXX, bubblecolour=green] | [think={XXX}] | [think=XXX, bubblecolour=green] | [book={XXX}] | |
|  |  |  | | |
| [book=XXX, bookcolour=green] | \tikz \duck[book=\scalebox{0.5}{XXX}] | | \tikz \duck[signpost=\scalebox{0.4}{\parbox{2cm}\centering XXX ; XXXXX}] | |

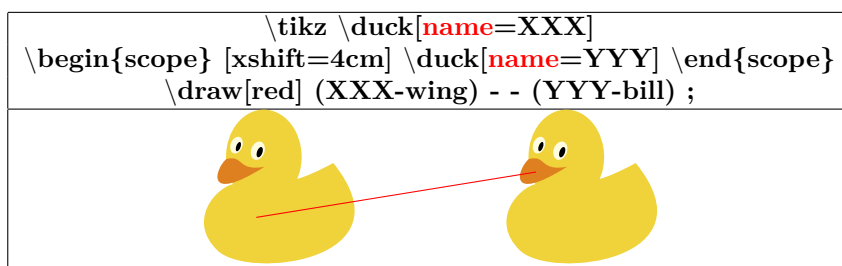
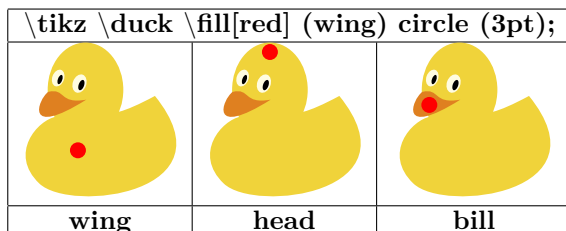
| | | | | |
|--|--|--|---|---|
|  |  |  |  |  |
| [cricket] | [hockey] | [football] | [lightsaber] | [torch] |
|  |  |  |  |  |
| [prison] | [necklace] | [icecream] | [icecream, flavoura=green] | [icecream, flavourb=green] |
|  |  |  |  |  |
| [icecream, flavourc=green] | [chef] | [rollingpin] | [cake] | [pizza] |
|  |  |  | | |
| [baguette] | [milkshake] | [wine] | | |

| | | | |
|---|---|---|---|
| \tikz \duck \path[preaction={fill,green},pattern=dots, pattern color=red] \duckpathbody ; | | | |
|  |  |  |  |
| \duckpathbody | \duckpathgrumpybill | \duckpathbill | \duckpathtshirt |
|  |  |  |  |
| \duckpathjacket | \duckpathcape | \duckpathshorthair | \duckpathlonghair |
|  |  |  | |
| \duckpathcrazyhair | \duckpathrecedinghair | \duckpathcrown | |

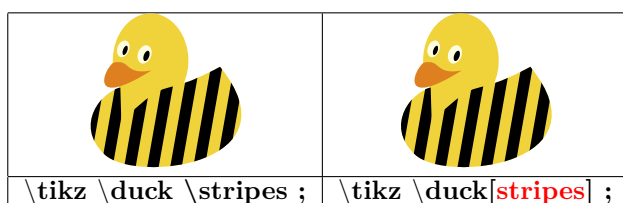
21.2.2 Canards aléatoires












21.2.3 Coordonnées



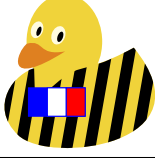



21.2.4 Rayures



| | |
|---|---|
|  |  |
| <code>\tikz \duck[rollingpin] \stripes ;</code> | <code>\tikz \duck[rollingpin,stripes] ;</code> |

| <code>\tikz \[duck] \stripes[color=red];</code> | | | |
|---|---|---|--|
|  |  |  |  |
| <code>[color=red]</code> | <code>[distance=.5]</code> | <code>[width=.05]</code> | <code>[height=1]</code> |
| Par défaut : black | Par défaut : 0.3 | Par défaut : 0.15 | Par défaut : 2.7 |
|  |  |  | |
| <code>[rotate=45]</code> | <code>[initialx=1]</code> | <code>[initialy=1]</code> | |
| Par défaut : -10 | Par défaut : 0.1 | Par défaut : -0.3 | |

| <code>\tikz \[duck] \stripes[emblem=XXX];</code> | | |
|---|---|--|
|  |  |  |
| <code>[emblem=XXX]</code> | <code>[emblem={\includegraphics width=6mm}{LogoIUT} }]</code> | <code>[emblem={\DFR}]</code> |
| | | <code>\DFR : voir page 77</code> |

| |
|---|
|  |
| <code>\tikz \duck[stripes={ \stripes \stripes[rotate=45] }] ;</code> |

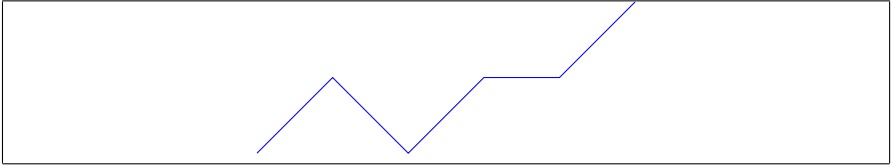
22 Créer un graphe

22.1 Graphe avec TikZ

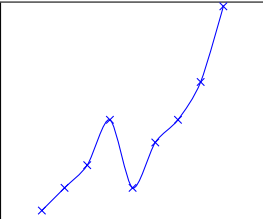
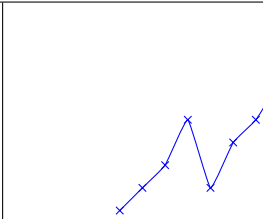
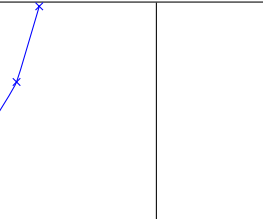
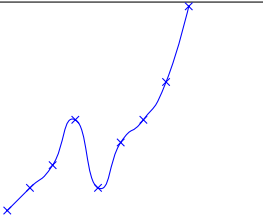
22.1.1 Graphe à partir d’une liste de points

PGFmanual section : 22-2

```
\tikz \draw plot coordinates {(0,0) (1,1) (2,0) (3,1) (4,1) (5,2)};
```



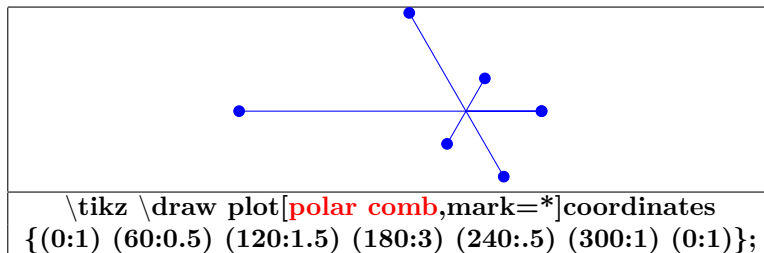
22.1.2 Graphe à partir d’un fichier de données

| | | | |
|---|---|--|---|
| <pre>\tikz \draw plot[mark=x] file {table.dat} ;</pre> | | | |
|  |  |  |  |
| [mark=x] | [mark=x,smooth] | [mark=x,smooth,tension=.2] | [mark=x,smooth,tension=1] |
| Par défaut : : tension= 0:55 | | | |

| Contenu du fichier table.dat | |
|------------------------------|-----|
| 0.0 | 0.3 |
| 0.3 | 0.6 |
| 0.6 | 0.9 |
| 0.9 | 1.5 |
| 1.2 | 0.6 |
| 1.5 | 1.2 |
| 1.8 | 1.5 |
| 2.1 | 2.0 |
| 2.4 | 3.0 |

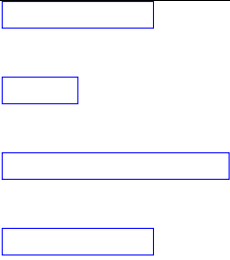
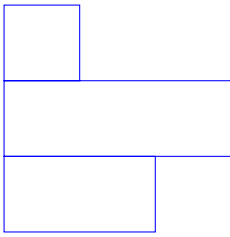
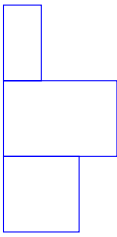
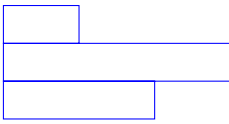
22.1.3 Les types de graphes

| \tikz \draw plot[mark=*, const plot] file {table.dat} ; | | | |
|---|-----------------------------|------------------------------|-----------------------|
| | | | |
| const plot | const plot mark left | const plot mark right | jump mark left |
| | | | |
| jump mark right | ycomb | xcomb | only marks |

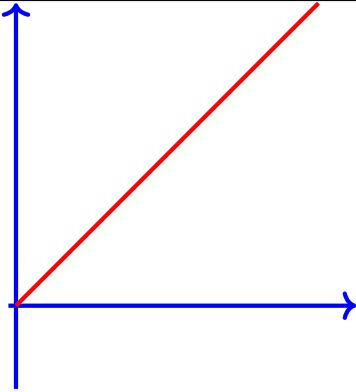
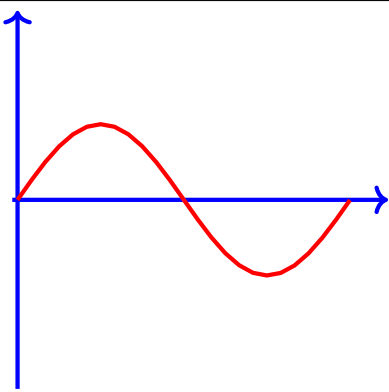
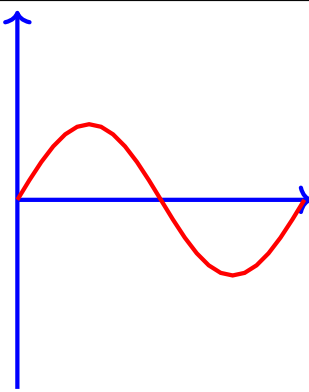


| \tikz \draw plot[ybar] file {table.dat} ; | | | |
|--|----------------------|----------------------------|-----------------------------|
| | | | |
| ybar | ybar interval | ybar interval,x=2cm | ybar interval,y=.5cm |

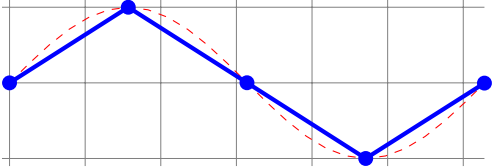
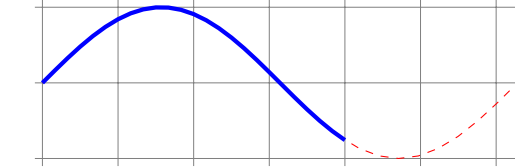
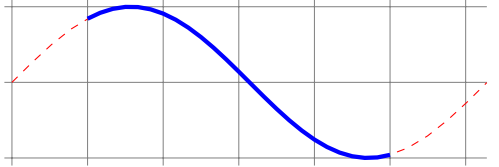
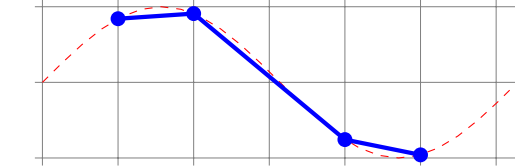
| | |
|--|---|
| | <pre> \begin{tikzpicture} \draw[red,fill=cyan,ybar,bar width=.5cm] plot coordinates {(0,1) (1,1.2) (2,.6) (3,.7) (4,.9)}; \draw[blue,fill=green,ybar,bar width=.5cm,bar shift=.3cm] plot coordinates {(0,1.2) (1,1.3) (2,.5) (3,.2) (4,.5)}; \end{tikzpicture} </pre> |
|--|---|

| \tikz \draw plot[xbar interval] file {table.dat} ; | | | |
|---|---|---|---|
|  |  |  |  |
| [xbar] | [xbar interval] | [xbar interval,x=.5cm] | [xbar interval,y=.5cm] |

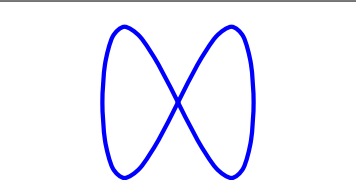
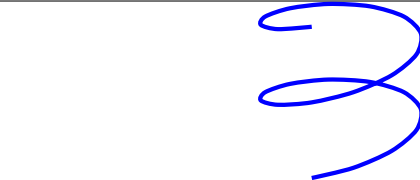
22.1.4 Graphe à partir d'une fonction

| | | |
|---|---|--|
| <code>\draw [color=red] plot (\x,\x);</code> | | |
|  |  |  |
| $(\backslash x, \backslash x)$ | $(\backslash x, \{\sin(\backslash x \text{ r})\})$ x en radian | $(\backslash x, \{\sin(\backslash x)\})$ x en degré |

Options

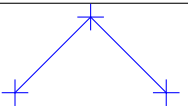
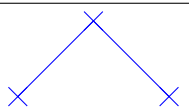
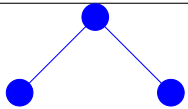
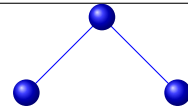
| | |
|---|--|
| <code>\draw[color=red,dashed] plot(\x,{sin(\x r)});</code> <code>\draw[color=blue,samples=5,mark=*,ultra thick] plot(\x,{sin(\x r)});</code> | |
|  |  |
| <code>[color=blue,samples=5,mark=*]</code> | <code>[color=blue,domain=0:4]</code> |
|  |  |
| <code>[color=blue,domain=1:5]</code> | <code>[color=blue,samples at={1,2,4,5},mark=*]</code> |

22.1.5 Fonctions paramétriques

| | |
|---|---|
| <code>\draw[domain=-3.141:3.141,smooth,variable=\t]plot ({sin(\t r)},{sin(2 *\t r)});</code> <code>\draw[domain=0:720,smooth,variable=\t]plot ({sin(\t)},{\t/360},{cos(\t)});</code> | |
|  |  |
| $(\{\sin(\backslash t \text{ r})\}, \{\sin(2 *\backslash t \text{ r})\})$ | $(\{\sin(\backslash t)\}, \backslash t/360, \{\cos(\backslash t)\})$ |

22.2 Marques

22.2.1 Marques avec TikZ

| | | | |
|---|---|---|---|
|  |  |  |  |
| mark=+ | mark=x | mark=* | mark=ball |

| | |
|--|---|
| | |
| <code>[color=blue,mark repeat=3,mark=*)</code> | <code>[color=blue,mark repeat=3,mark phase=5,mark=*)</code> |
| | |
| <code>[color=blue,mark indices=1,4,...,15,17,20,mark=*)</code> | <code>[color=blue,mark size=5pt,mark=*)</code> |
| | |
| <code>mark options={color=magenta},mark=+</code> | <code>mark options={rotate=10},mark=+</code> |

22.2.2 Marques personnalisées avec text mark

| | | |
|---|------------------------------|--------------------------------|
| <code>\draw[mark=text ,text mark=A,mark size=5pt] coordinates {(0,0) (1,1) (2,0)};</code> | | |
| | | |
| <code>text mark=A</code> | <code>text mark=Texte</code> | <code>text mark=\DFR 77</code> |
| | | |
| <code>text mark={\includegraphics[width=.5cm]{tiger}}</code> | | |

22.2.3 Marques avec l'extension plotmarks

Charger l'extension: `\usetikzlibrary{plotmarks}`

PGFmanual section : 63

| | | | |
|---------------------------|-------------------------------|--------------------------------|------------------------------------|
| | | | |
| mark= - | mark= | mark= o | mark= asterisk |
| | | | |
| mark= =star | mark= =10-pointed star | mark= oplus | mark= oplus* |
| | | | |
| mark= otimes | mark= otimes* | mark= square | mark= square* |
| | | | |
| mark= triangle | mark= triangle* | mark= diamond | mark= diamond* |
| | | | |
| mark= halfdiamond* | mark= halfsquare* | mark= halfsquare right* | mark= halfsquare left* |
| | | | |
| mark= pentagon | mark= pentagon* | mark= Mercedes star | mark= Mercedes star flipped |
| | | | |
| mark= halfcircle | mark= halfcircle* | mark= heart | mark= text |

`\draw[mark=halfcircle,mark color=red,mark size=5pt] coordinates {(0,0) (1,1) (2,0)};`

| | | | |
|-----------------|------------------|-------------------|------------------|
| | | | |
| mark=halfcircle | mark=halfcircle* | mark=halfdiamond* | mark=halfsquare* |

22.3 Graphes avec Gnuplot

`\draw[color=red] plot[id=sin] function{sin(x)} ;`

==> plot[id=sin] crée le fichier "sin.gnuplot"

==> Ouvrir le fichier "sin.gnuplot" avec le programme gnuplot pour créer le fichier "sin.table"

==> Utiliser le fichier de données "sin.table"

23 Créer un graphe avec pgfplot

Charger l'extension: `\usepackage{pgfplots}` [2]

23.1 Courbes 2 D

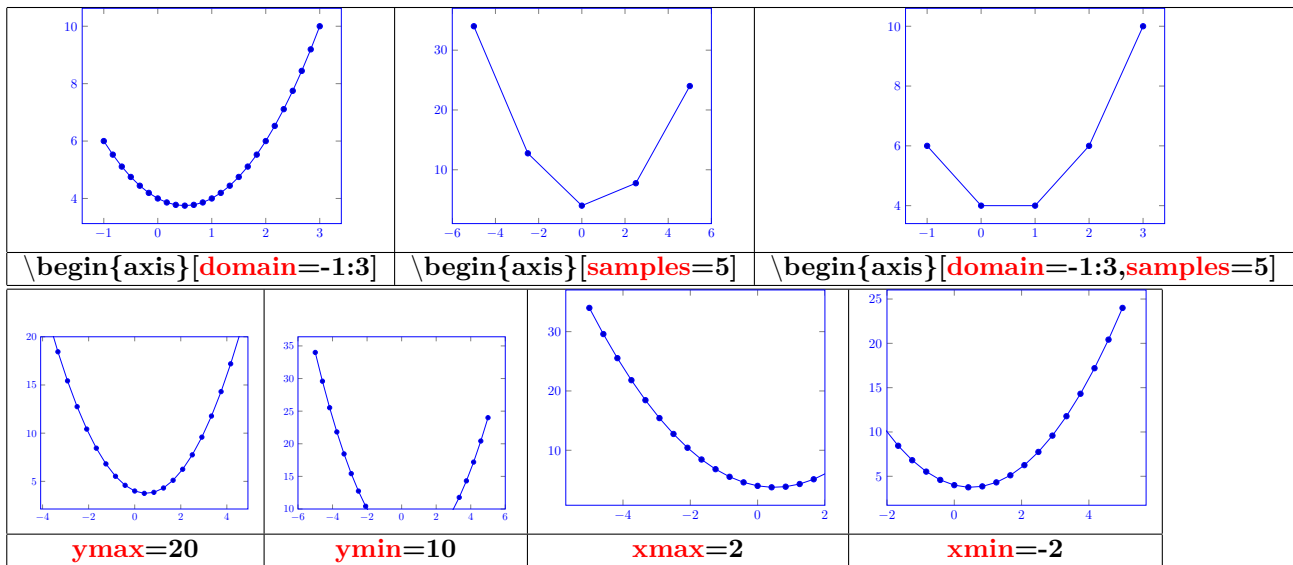
23.1.1 Axes

| pgfplots section : 4-1 | | | |
|---------------------------|-----------------------------------|-----------------------------------|---------------------------------|
| | | | |
| <code>\begin{axis}</code> | <code>\begin{semilogxaxis}</code> | <code>\begin{semilogyaxis}</code> | <code>\begin{loglogaxis}</code> |
| <code>\end{axis}</code> | <code>\end{semilogxaxis}</code> | <code>\end{semilogyaxis}</code> | <code>\end{loglogaxis}</code> |

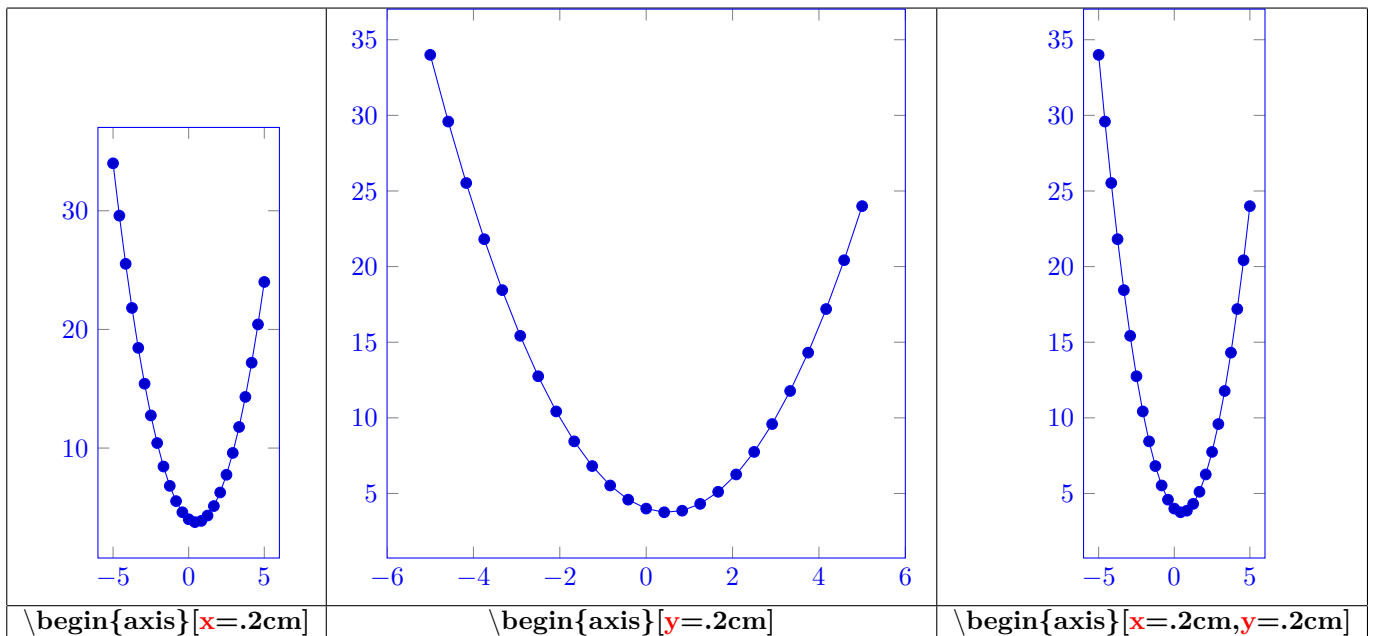
23.2 Tracé de la courbe

| pgfplots section : 4-2 | | |
|--|-------------------------------------|--|
| | | |
| <code>\addplot coordinates {(0,0) (1,1) (2,0) (3,1) (4,1) (5,2)};</code> | <code>\addplot {x^2 - x +4};</code> | <code>\addplot gnuplot[id=sin]{sin(x)};</code> |

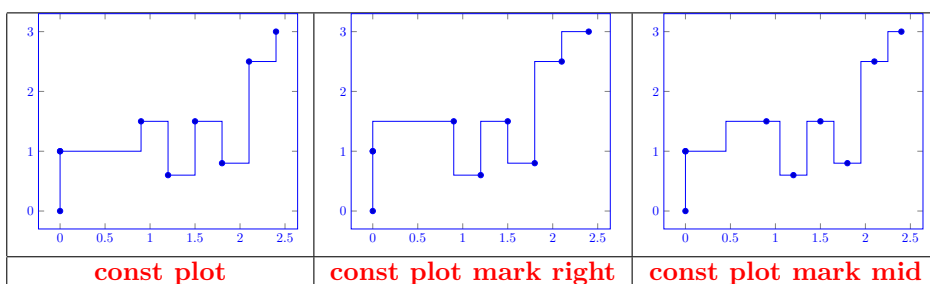
| | | |
|--|-------------------------------------|-------------------------------------|
| | | |
| axes : semilogxaxis | axes : semilogxaxis | axes : semilogyaxis |
| <code>\addplot coordinates {(0,0) (1,1) (2,0) (3,1) (4,1) (5,2)};</code> | <code>\addplot {x^2 - x +4};</code> | <code>\addplot {x^2 - x +4};</code> |

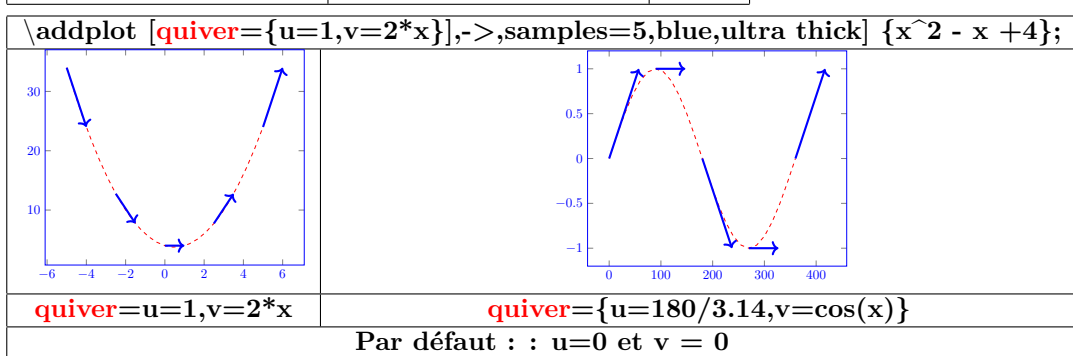
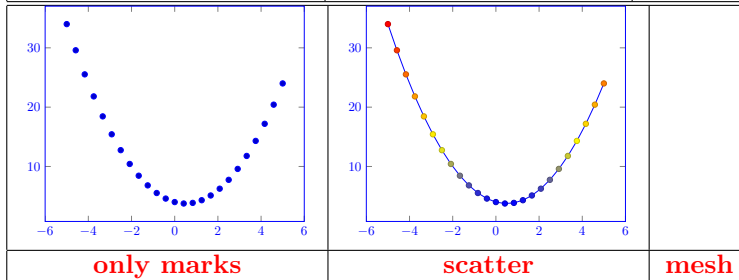
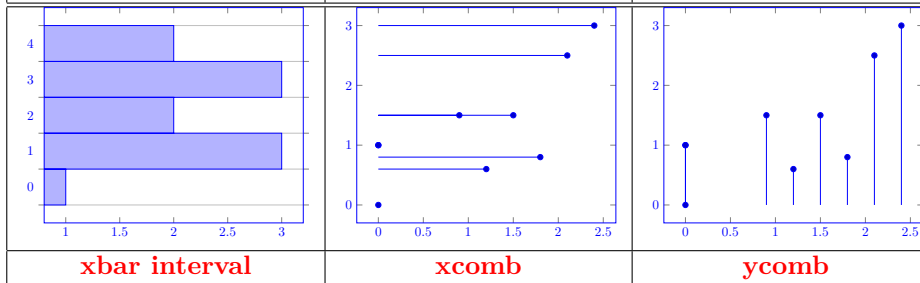
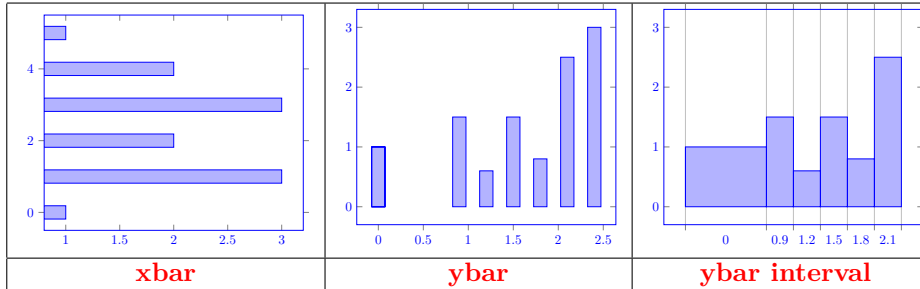
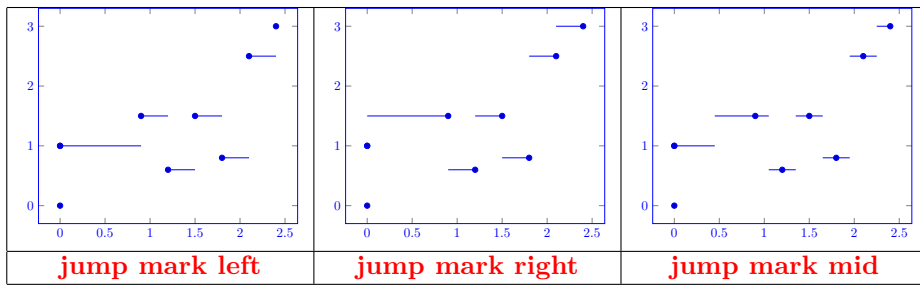


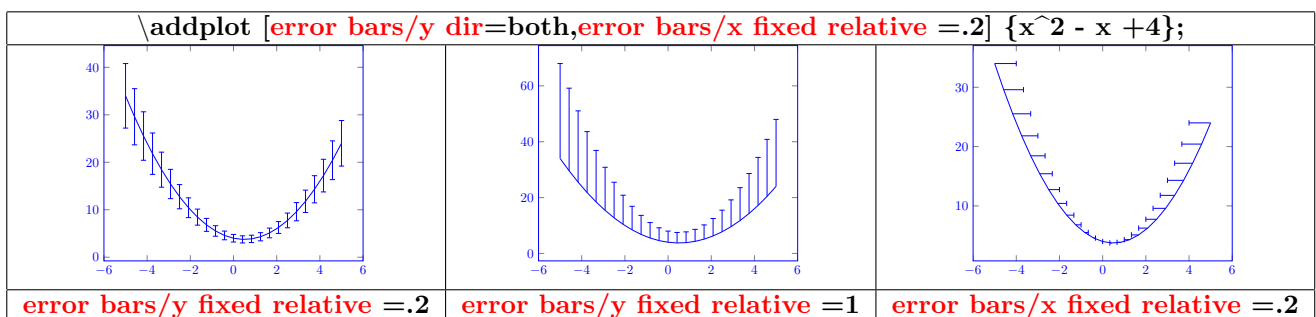
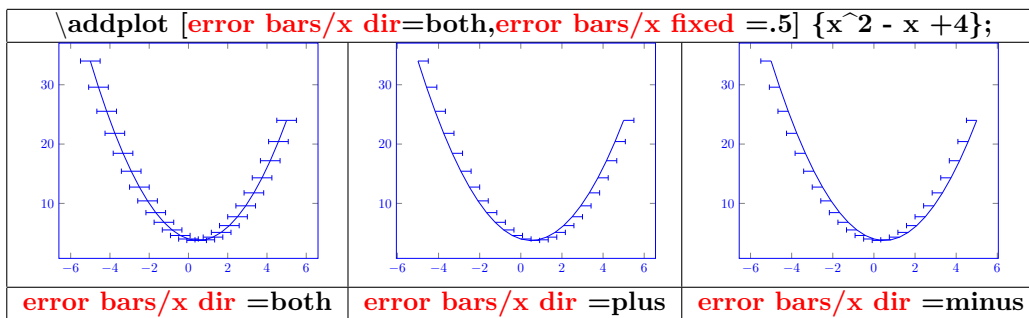
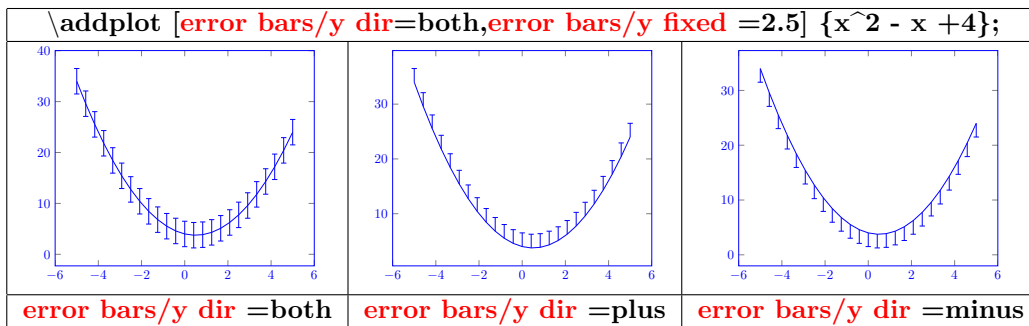
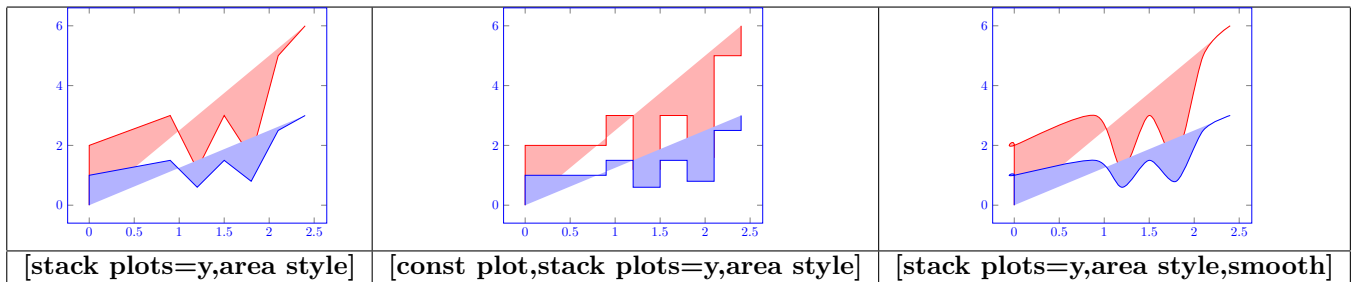
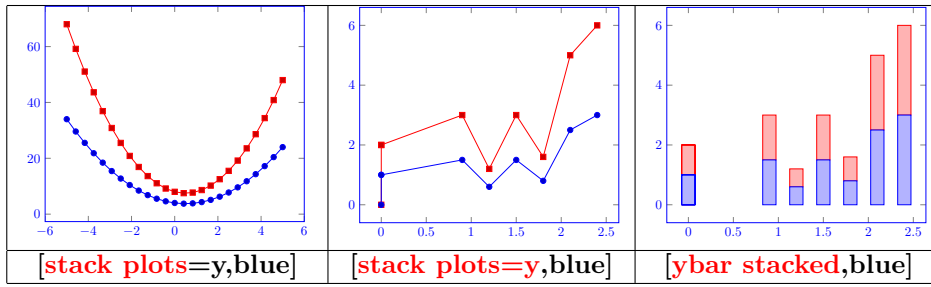
23.2.1 Dimension unitaire en X et Y



23.2.2 Type de graphiques

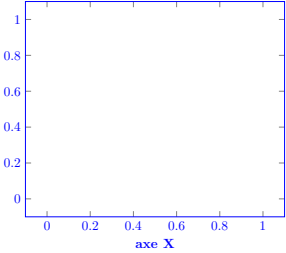
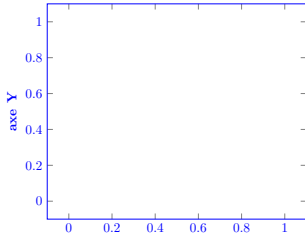
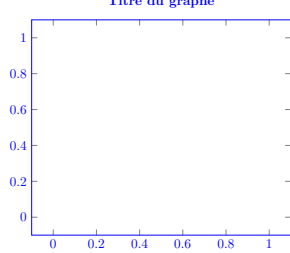




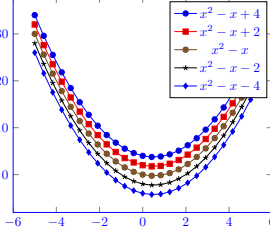
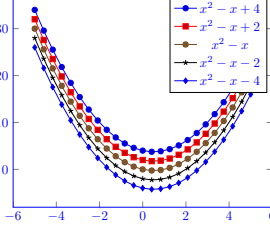


23.3 Habillage du graphe

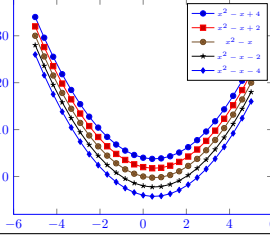
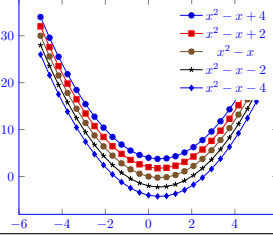
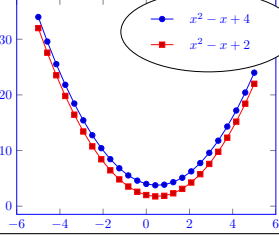
23.3.1 Titres

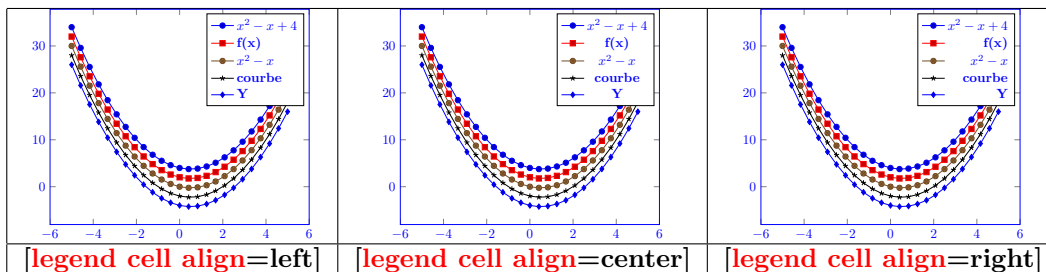
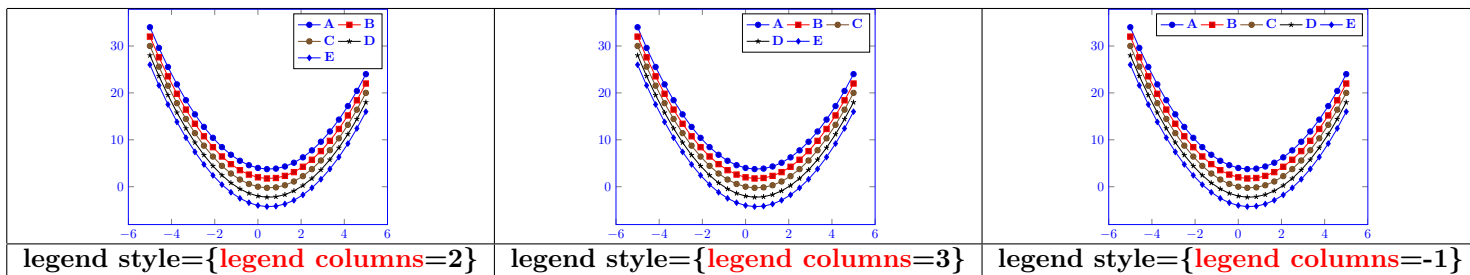
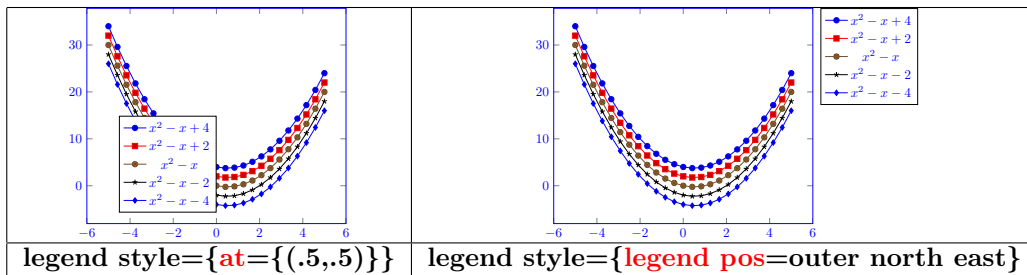
| | | |
|---|---|---|
|  |  |  |
| <code>\begin{axis}[xlabel=axe X]</code> | <code>\begin{axis}[ylabel=axe Y]</code> | <code>\begin{axis}[title=Titre du graphe]</code> |

23.3.2 Légende

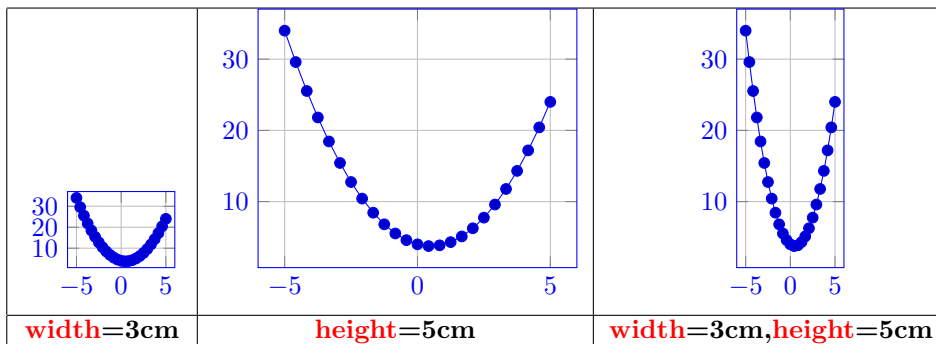
| | |
|---|---|
|  | <pre> \begin{axis} \addplot {x^2 - x + 4}; \addplot {x^2 - x + 2}; \addplot {x^2 - x}; \addplot {x^2 - x - 2}; \addplot {x^2 - x - 4}; \legend{\$x^2 - x + 4\$, \$x^2 - x + 2\$, \$x^2 - x\$, \$x^2 - x - 2\$, \$x^2 - x - 4\$} \end{axis} </pre> |
|  | <pre> \begin{axis}[legend entries = { \$ x^2 - x + 4 \$, \$ x^2 - x + 2 \$, \$ x^2 - x \$, \$ x^2 - x - 2 \$, \$ x^2 - x - 4 \$ }] \addplot {x^2 - x + 4}; \addplot {x^2 - x + 2}; \addplot {x^2 - x}; \addplot {x^2 - x - 2}; \addplot {x^2 - x - 4}; \end{axis} </pre> |

Options

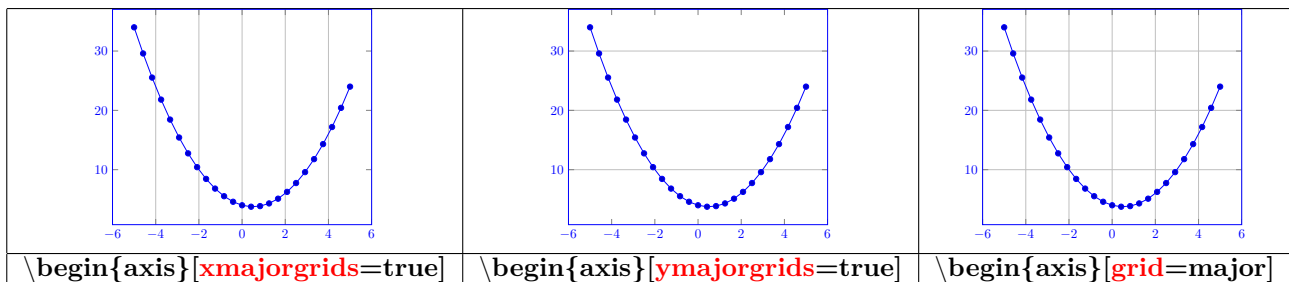
| | | |
|---|---|--|
|  |  |  |
| <code>legend style={font=\tiny}</code> | <code>legend style={draw=none}</code> | <code>legend style={shape=ellipse}</code> |

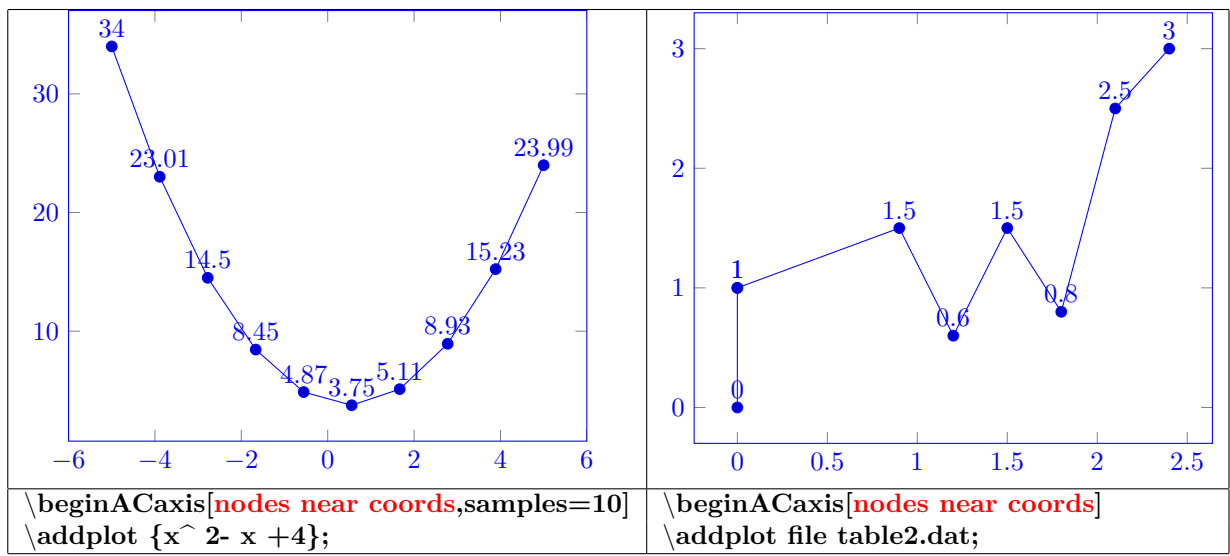


23.3.3 Taille du graphe



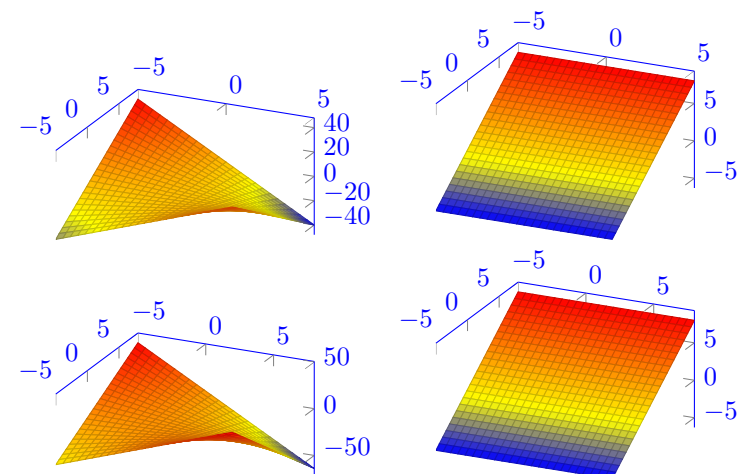
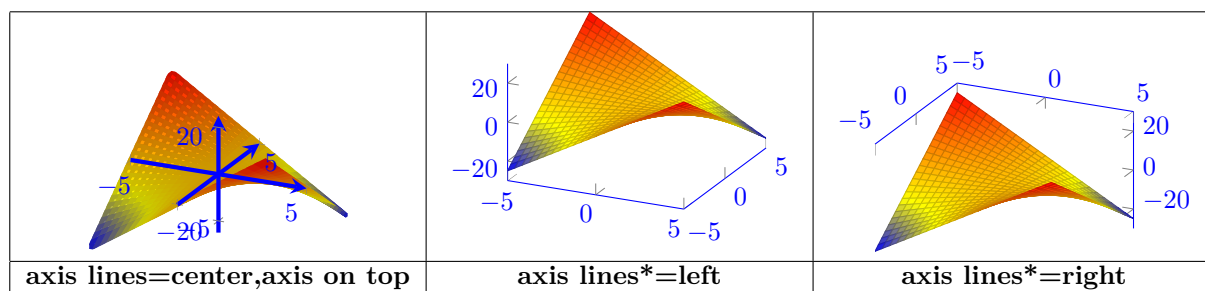
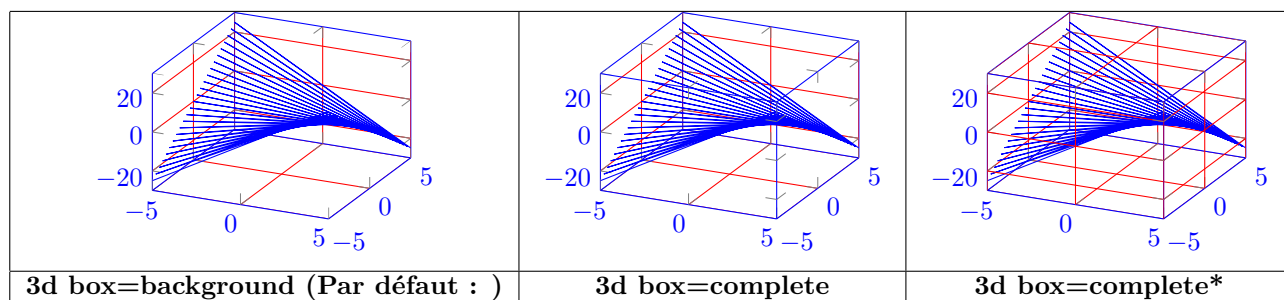
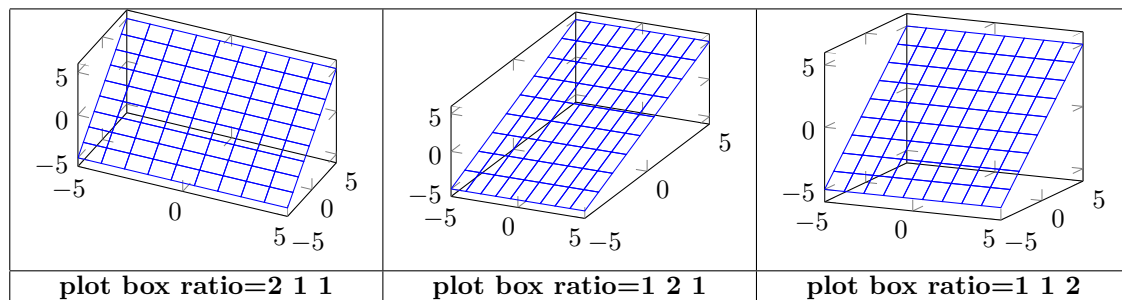
23.3.4 Quadrillage



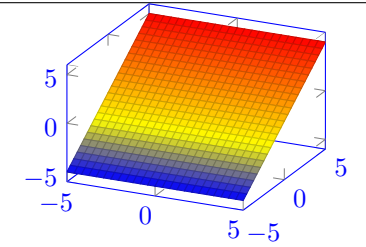
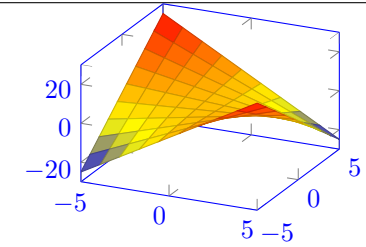


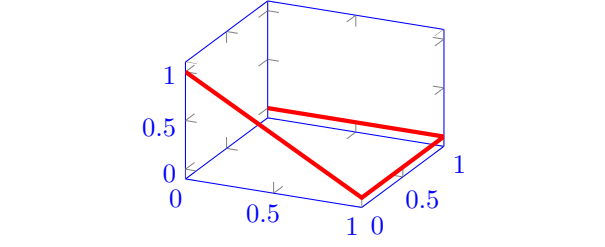
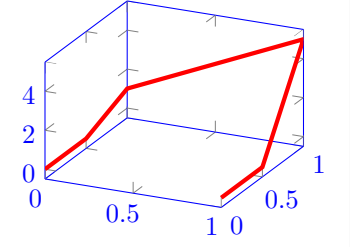
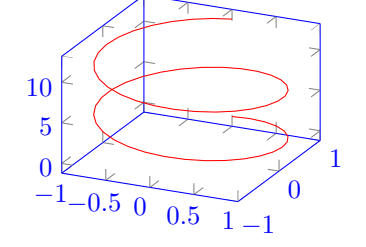
24 Courbes 3D

24.0.1 Axes



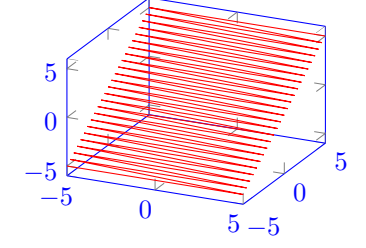
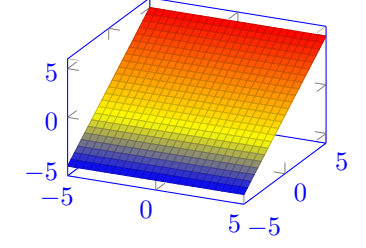
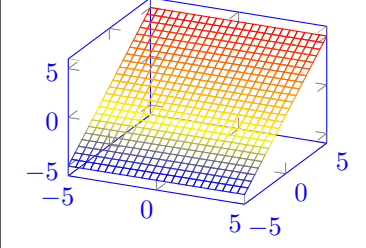
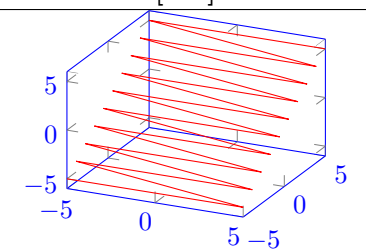
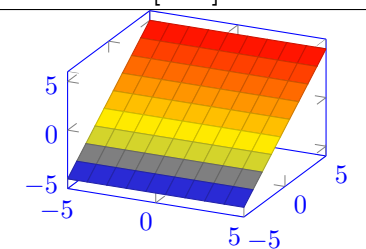
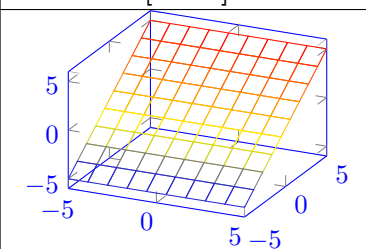
24.0.2 Tracé de la courbe

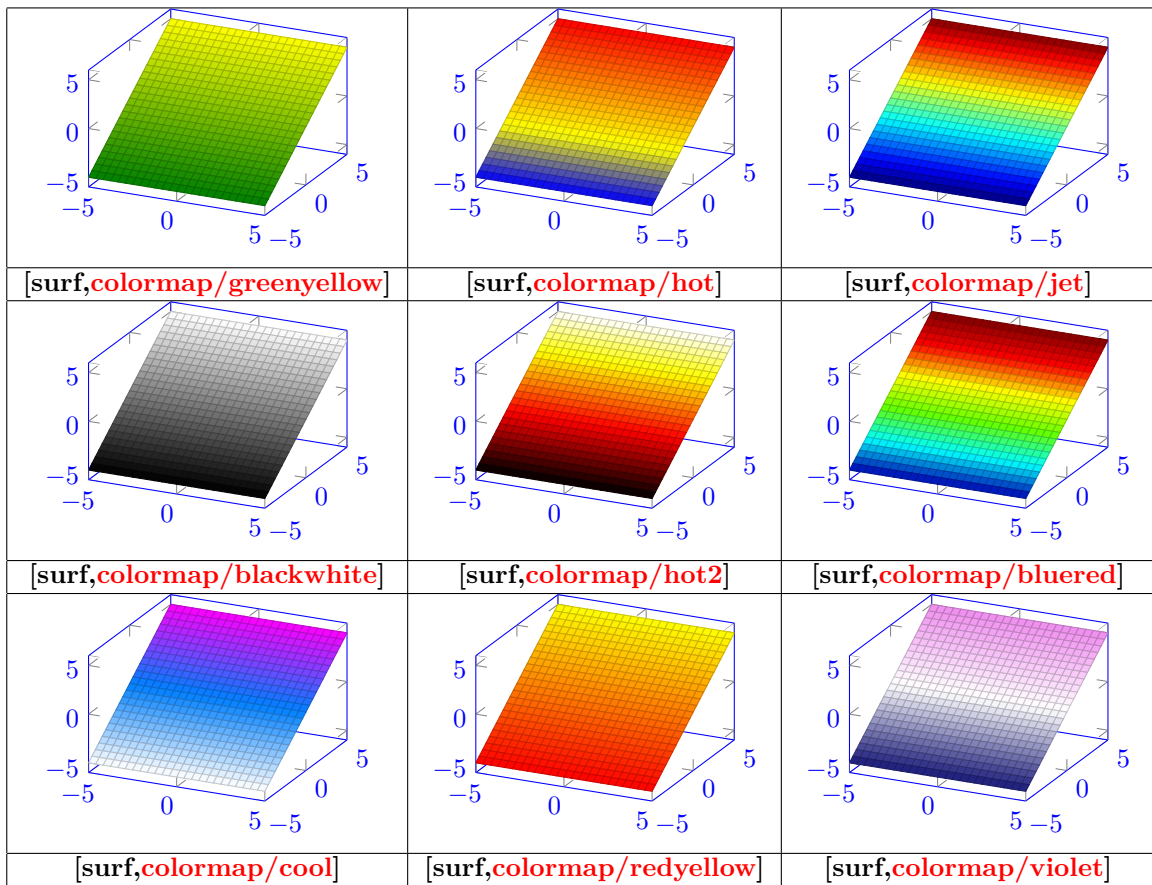
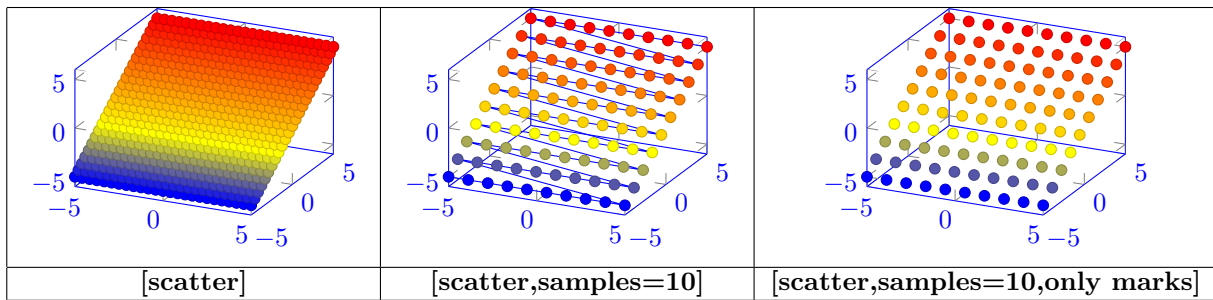
| | | |
|---|---|-----------------------------------|
| \addplot3 [surf] {y}; | | |
|  |  | |
| {y} | {-x*y} | gnuplot[id=sinxy]{sin(x)*sin(y)}; |

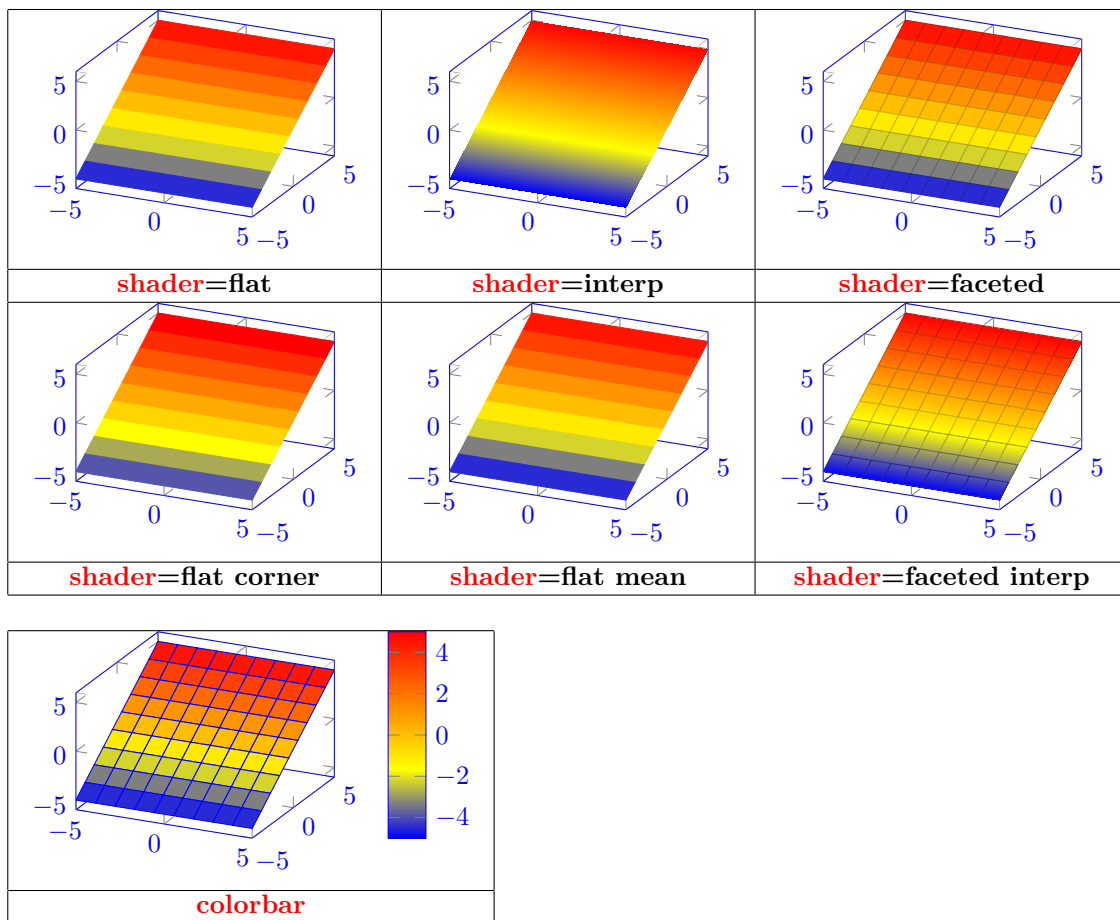
| | | |
|---|--|---|
|  |  |  |
| coordinates {(0,0,1) (1,0,0) (1,1,0) (0,1,0)}; | file {table3.dat}; | {sin(x)},{cos(x)},{x/60}}; |

| Contenu du fichier table3.dat | | |
|-------------------------------|-----|---|
| 0 | 0 | 0 |
| 0 | 0.5 | 0 |
| 0 | 1 | 1 |
| 1 | 1 | 5 |
| 1 | 0.5 | 0 |
| 1 | 0 | 0 |

24.0.3 Aspect

| | | |
|---|---|--|
|  |  |  |
| [red] | [surf] | [mesh] |
|  |  |  |
| [red,samples=10] | [surf,samples=10] | [mesh,samples=10] |





24.0.4 Point de vue

Azimut
view/az= angle de - 50 à +50

Elévation
view/el= angle de - 50 à +50

25 Les Tableaux de variation

Charger l'extension: `\usepackage{tkz-tab}` [3]

25.1 Déclaration du tableau

| | | | |
|----------|---|---|---|
| 1° ligne | a | b | c |
| 2° ligne | | | |

`\begin{tikzpicture}`
`\tkzTabInit{1° ligne / 1 ,2° ligne /1 } { a , b , c }`
`\end{tikzpicture}`

25.1.1 Options

| Hauteur des ligne | | | |
|-------------------|---|---|---|
| 1° ligne | a | b | c |
| 2° ligne | | | |
| 3° ligne | | | |

`\tikz \tkzTabInit{1° ligne '/1 , 2° ligne /.5 , 3° ligne /1.5 }{a , b , c };`

| Largeur de la première colonne | | | |
|--------------------------------|---|---|---|
| x | a | b | c |

`\tkzTabInit[lgt=4]{ x / 1}{ a , b , c };`
Par défaut : : lgt==2 cm

| Espace entre deux valeurs | | | |
|---------------------------|---|---|---|
| x | a | b | c |

`\tkzTabInit[espcl=1]{ x / 1}{ a , b , c };`
Par défaut : : espcl=2 cm

| Marge de début et de fin | | | |
|--------------------------|---|---|---|
| x | a | b | c |

`\tkzTabInit[deltacl=1]{ x / 1}{ a , b , c };`
Par défaut : : deltacl=0.5 cm

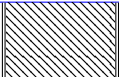
| Épaisseur des lignes du tableau | | | |
|---|---|---|---|
| x | a | b | c |
| $\backslash\mathrm{tkzTabInit}[\mathrm{dlw}=2\mathrm{pt}]\{x / 1\}\{a, b, c\};$ Par défaut : : lw=0,4 pt | | | |

| Absence de cadre | | | |
|--|---|---|---|
| x | a | b | c |
| $\backslash\mathrm{tkzTabInit}[\mathrm{nocadre}]\{x / 1\}\{a, b, c\};$ Par défaut : : nocadre=false | | | |

| Mise en couleur | | | |
|---|---|------------------------------------|--|
| \tkzTabInit [color,colorT = yellow]{1°ligne/1 , 2°ligne/1}{ a , b } | | | |
| 1°ligne | a | b | |
| 2°ligne | | | |
| [color,colorT = yellow] | | [color,colorC = cyan] | |
| 1°ligne | a | b | |
| 2°ligne | | | |
| [color,colorL = green] | | [color,colorV = magenta] | |
| Par défaut : : color = false | | colorT=colorC=colorL=colorV =white | |

25.2 Création d’une ligne de signes

| | | | |
|--|---|---|---|
| x | a | b | c |
| $f(x)$ | 2 | 4 | |
| $\backslash\mathrm{tkzTabLine}\{\mathrm{t}, 2,\mathrm{t},4,\mathrm{t}\}$ | | | |
| x | a | b | c |
| $f(x)$ | 2 | 4 | |
| $\backslash\mathrm{tkzTabLine}\{\mathrm{d}, 2,\mathrm{d},4,\mathrm{d}\}$ | | | |
| x | a | b | c |
| $f(x)$ | 0 | 2 | 0 |
| $\backslash\mathrm{tkzTabLine}\{\mathrm{z}, 2,\mathrm{z},4,\mathrm{z}\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | 3 | 4 |
| $\backslash\mathrm{tkzTabLine}\{1,\mathrm{h},3,4,5\}$ | | | |

| Exemple | | | | | |
|---------|-----------|------|---|------|-----------|
| x | $-\infty$ | -4 | 4 | 10 | $+\infty$ |
| $f(x)$ | \vdots | $+$ |  | $-$ | \vdots |

```

\begin{tikzpicture}
\tkzTabInit[espc1=1.5]{\$x\$ / 1 ,\$f(x)\$ /1 } {  $-\infty$  ,  $-4$  ,  $4$  ,  $10$  ,  $+\infty$  }
\tkzTabLine{ t,+ , d ,h ,d,-,z,+ }
\end{tikzpicture}

```

25.3 Création d'une ligne de variations

| | | | | | | | | | | | | | | | | | |
|---|---|------------------|-----|-----|--------|--------------------------------|------------------|--|---|-----|-----|-----|-----|--------|--------------------------------|------------------|--|
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow 2$ | | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow 2$ | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow 2$ | | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow 2$ | | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{+/1, -/2\}$ | $\backslash\text{tkzTabVar}\{-/1, +/2\}$ | | | | | | | | | | | | | | | | |
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \longrightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \longrightarrow 2$ | | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \longrightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \longrightarrow 2$ | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \longrightarrow 2$ | | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \longrightarrow 2$ | | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{-/1, -/2\}$ | $\backslash\text{tkzTabVar}\{+/1, +/2\}$ | | | | | | | | | | | | | | | | |
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$\parallel 1 \rightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $\parallel 1 \rightarrow 2$ | | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$\parallel 1 \rightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $\parallel 1 \rightarrow 2$ | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $\parallel 1 \rightarrow 2$ | | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $\parallel 1 \rightarrow 2$ | | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{+C/1, -/2\}$ | $\backslash\text{tkzTabVar}\{-C/1, +/2\}$ | | | | | | | | | | | | | | | | |
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow \parallel 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow \parallel 2$ | | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow \parallel 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow \parallel 2$ | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow \parallel 2$ | | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow \parallel 2$ | | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{-/1, -C/2\}$ | $\backslash\text{tkzTabVar}\{+/1, +C/2\}$ | | | | | | | | | | | | | | | | |
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow \text{hatched}$</td><td>$2$</td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow \text{hatched}$ | 2 | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow \text{hatched}$</td><td>$2$</td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow \text{hatched}$ | 2 | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow \text{hatched}$ | 2 | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow \text{hatched}$ | 2 | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{+H/1, -/2\}$ | $\backslash\text{tkzTabVar}\{-H/1, +/2\}$ | | | | | | | | | | | | | | | | |
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow 2$</td><td>hatched</td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow 2$ | hatched | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow 2$</td><td>hatched</td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow 2$ | hatched | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow 2$ | hatched | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow 2$ | hatched | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{-/1, -H/2\}$ | $\backslash\text{tkzTabVar}\{+/1, +H/2\}$ | | | | | | | | | | | | | | | | |

| | | | |
|---------------------------|---|-------------------|---|
| x | a | b | c |
| $f(x)$ | 1 | \longrightarrow | 2 |
| \tkzTabVar{ +D/1 , -/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| \tkzTabVar{ -D/1 , +/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
| \tkzTabVar{ -/1 , -D/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| \tkzTabVar{ +/1 , +D/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
| \tkzTabVar{ D+/1 , -/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| \tkzTabVar{ D-/1 , +/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
| \tkzTabVar{ -/1 , D-/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| \tkzTabVar{ +/1 , D+/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \longrightarrow | 2 |
| \tkzTabVar{ +DH/1 , -/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| \tkzTabVar{ -DH/1 , +/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
| \tkzTabVar{ -/1 , -DH/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| \tkzTabVar{ +DH/1 , +/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
| \tkzTabVar{ +CH/1 , -/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| \tkzTabVar{ -CH/1 , +/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
| \tkzTabVar{ -/1 , -CH/2 } | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| \tkzTabVar{ +/1 , +CH/2 } | | | |

| | | | |
|----------------------------------|-------------------|-------------------|---|
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +D-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -D+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -D-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +D+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +CD-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -CD+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -CD-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +CD+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +DC-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -DC+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -DC-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +DC+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +V-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -V+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -V-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +V+/2 , -/3 } | | | |

| Mise en évidence d'une valeur | | | |
|-------------------------------|---|---|---|
| x | a | b | c |
| $f(x)$ | 1 | 2 | 3 |

`\tkzTabVar{+/1 , -V-/\colorbox{yellow}{2} , +/3}`

| Variation sur plusieurs colonnes | | | |
|----------------------------------|---|-----|---|
| x | a | b | c |
| $f(x)$ | 1 | → 3 | |

`\tkzTabVar{-/1 , R/ , +/3}`

| Valeurs intermédiaires | | | | | | | | | | |
|------------------------------|--|-----------------------------------|--|--|------------------------------|--|--------|--|--|-----------------------------------|
| x | | a A b | | | | | x | | | a b A c |
| $f(x)$ | | 1 $\xrightarrow{\quad x \quad}$ 3 | | | | | $f(x)$ | | | 1 $\xrightarrow{\quad x \quad}$ 3 |
| \tkzTabVal{1}{3}{0.25}{A}{x} | | | | | \tkzTabVal{1}{3}{0.75}{A}{x} | | | | | |

| | | | | |
|--------|---|---|-----|---|
| x | a | A | b | c |
| | | ⋮ | | |
| $f(x)$ | 1 | x | → 3 | |

`\tkzTabVal[draw]{1}{3}{0.25}{A}{x}`


| Ajout d'images | | | | | | | | | |
|----------------|---|-----|---|---|--------|---|-----|---|---|
| x | a | b | c | d | x | a | b | c | d |
| $f(x)$ | 1 | → 3 | | | $f(x)$ | 1 | → 3 | | |

`\tkzTabIma{1}{4}{2}{x}` `\tkzTabIma{1}{4}{3}{x}`


26 Les répétitions

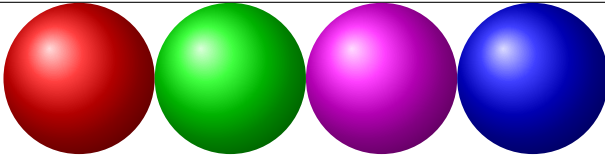
Utilisation du module “pgffor” chargé automatiquement avec TikZ

26.1 Répétition à 1 variable

| |
|---|
|  |
| <code>\tikz \foreach \x in {1,...,10} \fill[blue](\x,0) circle (0.4cm);</code> |
| Variable <code>\x</code> : position en X |

26.2 Répétition à 2 variables

| |
|---|
| Liste de variables numériques |
|  |
| <code>\tikz \foreach \pos/\y in {1/10,2/20,3/30,4/40,5/50,6/60,7/70,8/80,9/90,10/100} \fill[color=blue!\y](\pos,0) circle (0.5cm);</code> |
| Variable <code>\pos</code> : position en X Variable <code>\y</code> : couleur |

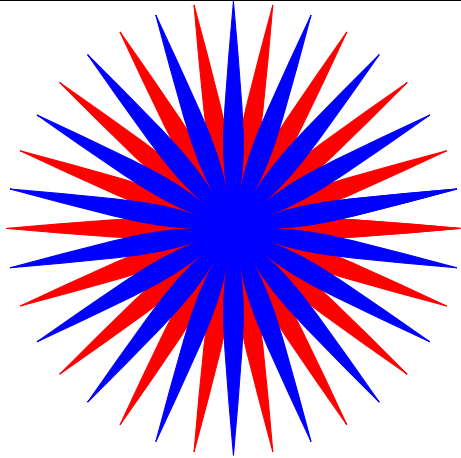
| |
|---|
| Liste de variables mixtes |
|  |
| <code>\tikz \foreach \x/\col in 1/red,3/green,5/magenta,7/blue \shade[ball color=\col](\x,0) circle (1);</code> |
| Variable <code>\x</code> : position en X Variable <code>\col</code> : couleur |

| Liste de variables avec un pas | | | | | | | |
|--------------------------------|-----|-----|-----|-----|-----|-----|------|
| 1,3 | 2,3 | 3,3 | 4,3 | 7,3 | 8,3 | 9,3 | 10,3 |
| 1,2 | 2,2 | 3,2 | 4,2 | 7,2 | 8,2 | 9,2 | 10,2 |
| 1,1 | 2,1 | 3,1 | 4,1 | 7,1 | 8,1 | 9,1 | 10,1 |

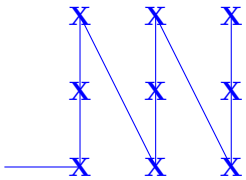
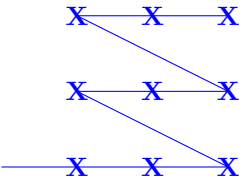
```
\begin{tikzpicture}
\foreach \x in {1,2,...,4,7,8,...,10}
\foreach \y in {1,...,3}
{ \draw (\x,\y) ++(-.5,-.5) rectangle ++(.5,.5); \draw (\x,\y)
node\x,\y; }
\end{tikzpicture}
```

| | |
|-----------------------------|-----------------------------|
| Variable \x : position en X | Variable \y : position en Y |
|-----------------------------|-----------------------------|

| Exemples de liste | |
|---|--|
| 1, 2, 3, 4, 5, 6, | <code>\foreach \x in {1,...,6} {\x, }</code> |
| 1, 3, 5, 7, 9, 11, | <code>\foreach \x in {1,3,...,11} {\x, }</code> |
| Z, X, V, T, R, P, N, | <code>\foreach \x in {Z,X,...,M} {\x, }</code> |
| $2^1, 2^2, 2^3, 2^4, 2^5, 2^6, 2^7,$ | <code>\foreach \x in {2^1,2^2,...,2^7} {\x, }</code> |
| 0cm, 0.5cm, 1cm, 1.5cm, 2cm, 2.5cm, 3cm, | <code>\foreach \x in {0cm,0.5cm,...cm,3cm} {\x, }</code> |
| $A_1, B_1, C_1, D_1, E_1, F_1, G_1, H_1,$ | <code>\foreach \x in {A_1,..._1,H_1} {\x, }</code> |

| Variables numériques avec opération |
|--|
|  |
| <pre> \begin{tikzpicture} \foreach \x in 0,20,...,360{ \filldraw[red] (0,0) .. controls (\x+10:1) .. (\x:1) .. controls (\x-10:1) .. (0,0);} \foreach \x in 10,30,...,370{ \filldraw[blue] (0,0) .. controls (\x+10:3) .. (\x:3) .. controls (\x-10:3) .. (0,0);} \end{tikzpicture} </pre> |
| Variable \x : angle |

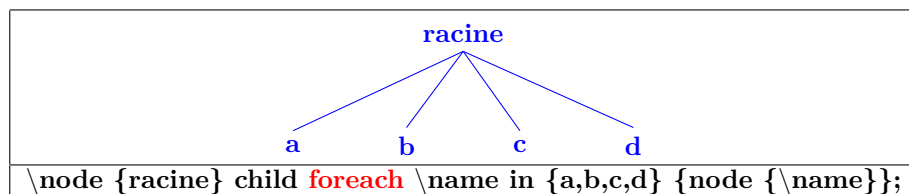
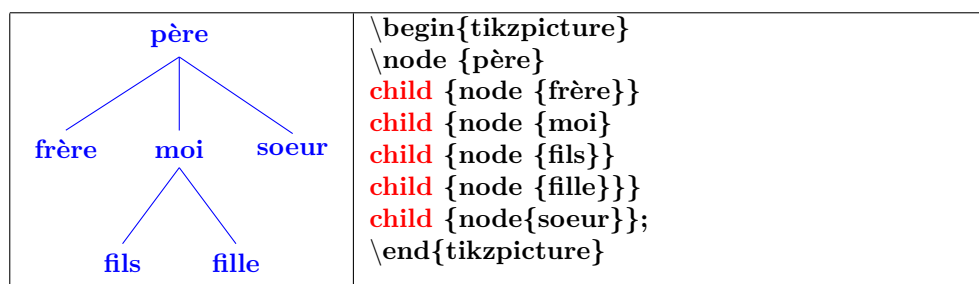
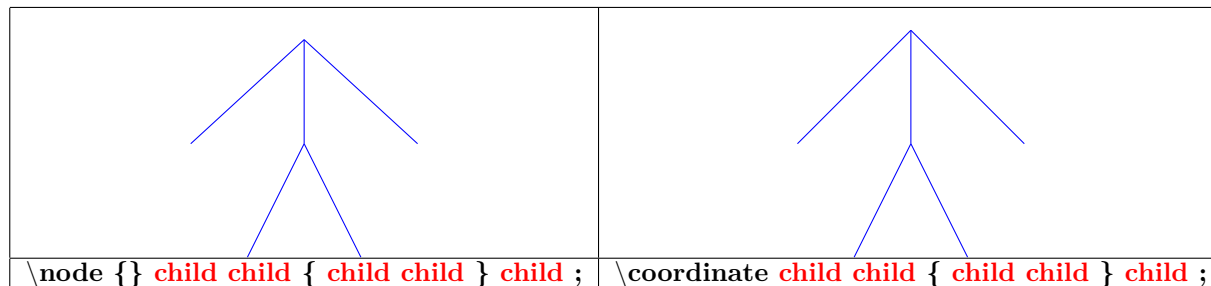
26.3 Répétition à 2 variables - boucles imbriquées

| Ordre des boucles imbriquées | |
|---|---|
|  |  |
| <pre> \begin{tikzpicture} \draw (0,0) \foreach \x in {1,2,3} \foreach \y in {0,1,2} {- (\x,\y) node{X}}; \end{tikzpicture} </pre> | <pre> \begin{tikzpicture} \draw (0,0) \foreach \y in {0,1,2} \foreach \x in {1,2,3} {- (\x,\y) node{X}}; \end{tikzpicture} </pre> |

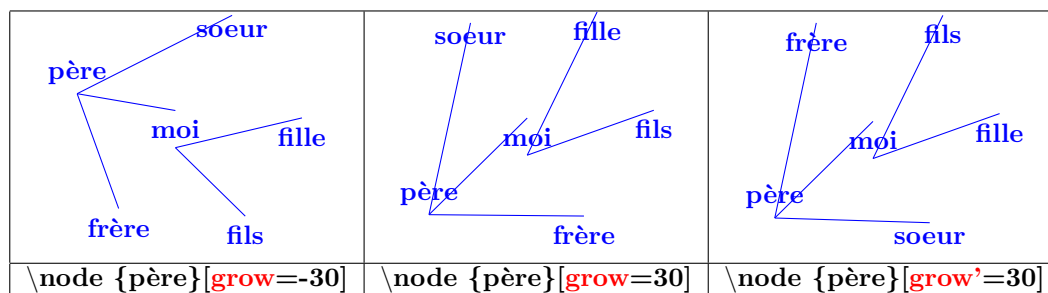
27 Les diagrammes arborescents

[PGFmanual section : 21](#)

27.1 Structure



27.2 Orientation



| | | |
|---------------------------------------|--------------------------------------|--|
| | | |
| <code>\node {père}[grow=up]</code> | <code>\node {père}[grow=left]</code> | <code>\node {père}[grow=right]</code> |
| | | |
| <code>\node {père}[grow=north]</code> | <code>\node {père}[grow=east]</code> | <code>\node {père}[grow=north east]</code> |

| | |
|--|---|
| | <pre> \node {père} child[grow=right,red] {node {frère}} child {node {moi}} child {node {fils}} child {node {filles}} child[grow=north west,red] {node{soeur}}; </pre> |
|--|---|

27.3 Distance

27.4 Distance père fils

| | |
|---|--|
| | |
| <code>\node {père}[level distance=3cm,red]</code> | <pre> child[level distance=3cm,red] {node {frère}} child[level distance=.5cm,red] {node {filles}} </pre> |
| Par défaut : : level distance=15 mm | |

| | |
|--|---|
| | |
| <code>\node {père}[level 1/.style={level distance=1cm}]</code> | <code>\node {père}[level 2/.style={level distance=.5cm}]</code> |

27.5 Distance père fils

| | |
|---|---|
| | |
| <code>\node {père}[sibling distance=1cm,red]</code> | <code>\node {père}[sibling distance=3cm,red]</code> |
| Par défaut : : sibling distance=15 mm | |

| Problème | solution |
|-------------------------------------|---|
| | |
| <code>[sibling distance=2cm]</code> | <code>[level 1/.style=sibling distance=2cm, level 2/.style=sibling distance=1cm]</code> |

27.6 Personnalisation des noeuds

| | |
|--|---|
| | <pre> \newcommand{\starburst}{\draw[red,starburst] (0,0) -- (1,1) -- (2,0) -- (1,-1) -- (0,0);} \newcommand{\diamond}{\draw[red,diamond] (0,0) -- (1,1) -- (2,0) -- (1,-1) -- (0,0);} \newcommand{\oval}{\draw[red,oval] (0,0) -- (1,1) -- (2,0) -- (1,-1) -- (0,0);} \begin{tikzpicture} \node[starburst,draw] (père){père} child {node[diamond,draw] (moi){moi}} child {node[diamond,draw] (soeur){soeur}} child {node[diamond,draw] (frère){frère}} child {node[oval,draw] (fils){fils}} child {node[oval,draw] (filles){filles}}; \end{tikzpicture} </pre> |
| | <pre> \begin{tikzpicture} \node[rectangle,double,draw,text width=1cm,text centered] (père){père et mère} child {node[rectangle,dashed,draw] (moi){moi}} child {node[rectangle,dotted,draw] (soeur){soeur}} child {node[rectangle,red,draw,rotate=45] (frère){frère}} child {node[oval,draw] (fils){fils}} child {node[oval,fill] (filles){filles}}; \end{tikzpicture} </pre> |

27.6.1 Nom des noeuds

| | |
|--|--|
| | <pre> \begin{tikzpicture} \node (a) {a} child { child { child {child child} child {child} }; \node at (a-1) {a-1}; \node at (a-2) {a-2}; \node at (a-2-2) {a-2-2}; \node at (a-2-1) {a-2-1}; \node at (a-2-1-2) {a-2-1-2}; \draw[red,ultra thick] (a-1) -- (a-2); \end{tikzpicture} </pre> |
|--|--|

¹ autres types de noeuds voir section 17

| | |
|--|---|
| | <pre> \begin{tikzpicture} \node (a) {a} child child child coordinate (b) child child child ; \node at (a-1) {a-1}; \node at (a-2) {a-2}; \node at (b) {b}; \node at (a-2-2) {a-2-2}; \node at (b-1) {b-1}; \node at (a-2-1-2) {a-2-1-2}; \draw[red,ultra thick] (a-1) -- (b-1); \end{tikzpicture} </pre> |
|--|---|

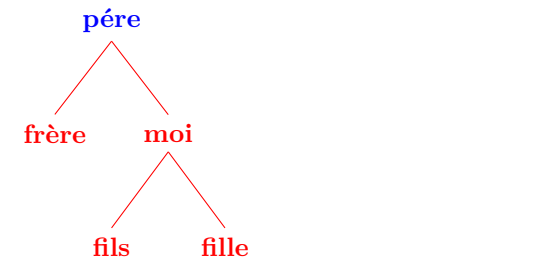
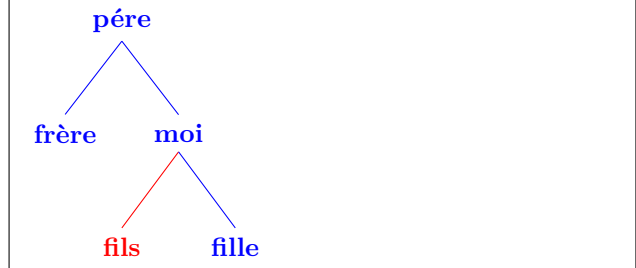
| | |
|--|---|
| | <pre> \begin{tikzpicture} \node (a) {père} child {node (b) {frère}} child {node (c) {moi}} child {node (d) {fils}} child {node (e) {fille}} child {node (f) {soeur}} ; \draw[red,ultra thick] (b) -- (d); \end{tikzpicture} </pre> |
|--|---|

27.6.2 Omission d'un noeud

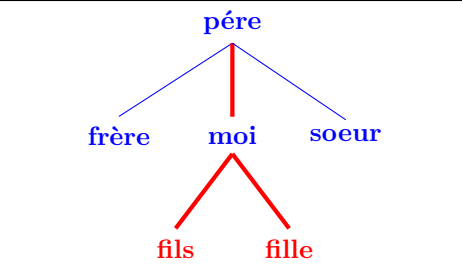
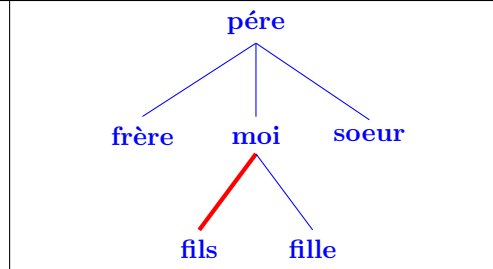
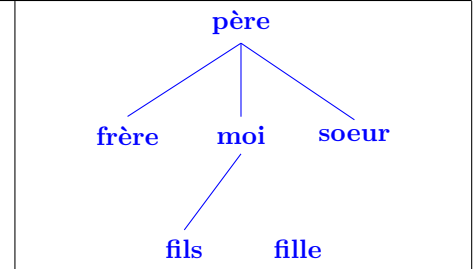
| | |
|--|---|
| | <pre> \begin{tikzpicture} \node (0) {0} child[missing] {node {4}} child {node {1}} child {node {2}} child {node {3}} child {node {5}} child {node {6}} ; \end{tikzpicture} </pre> |
|--|---|

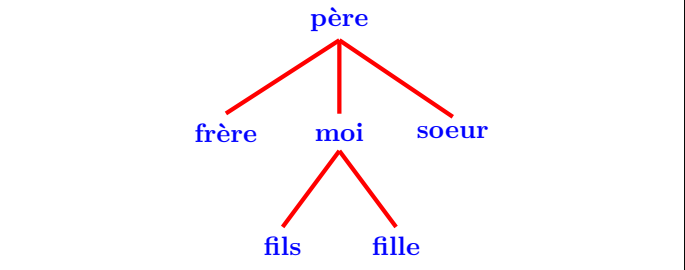
27.6.3 Modification du point d'accrochage

| | |
|--|--|
| | |
| <pre> \begin{tikzpicture} \node {père} [child anchor=east,red] child {node {frère}} child {node {moi}} child {node {fils}} child {node {fille}} ; \end{tikzpicture} </pre> | <pre> \begin{tikzpicture} \node {père} child {node {frère}} child {node {moi}} child [child anchor=west,red] {node {fils}} child {node {fille}} ; \end{tikzpicture} </pre> |

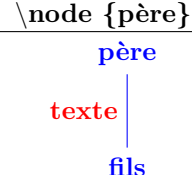
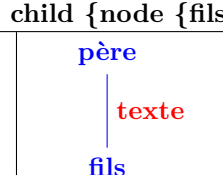
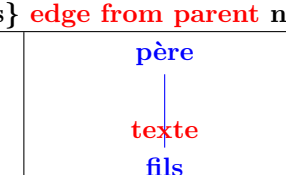
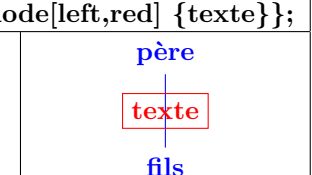
| | |
|--|--|
|  |  |
| <pre>\node {père} [parent anchor=east,red] child {node {frère}} child { node {moi}} child {node {fils}} child {node {fils}} };</pre> | <pre>\node {père} child {node {frère}} child { node {moi}} child [parent anchor=west,red] {node {fils}} child {node {fils}} };</pre> |

27.6.4 Liaison

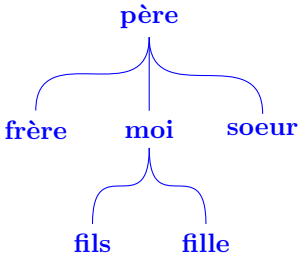
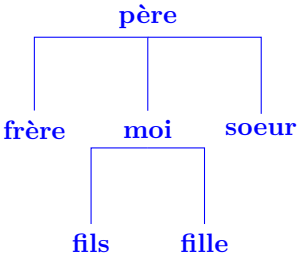
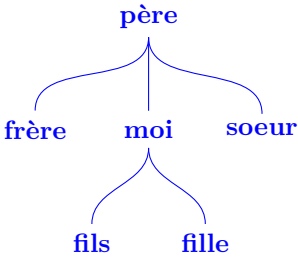
| | | |
|--|---|--|
|  |  |  |
| <pre>child {node {moi}} edge from parent[red,ultra thick]</pre> | <pre>child {node {fils}} edge from parent[red,ultra thick] }</pre> | <pre>child { node {fille}} edge from parent[draw=none] }</pre> |

| |
|---|
|  |
| <pre>[edge from parent/.style={draw,red,ultra thick}] \node {père}</pre> |

27.6.5 Étiquettes sur liaisons

| \node {père} child {node {fils} edge from parent node[left,red] {texte}}; | | | |
|---|---|---|--|
|  |  |  |  |
| node[left,red] | node[right,red] | node[near end,red] | node[draw,red] |

27.6.6 Personalisation des liaisons

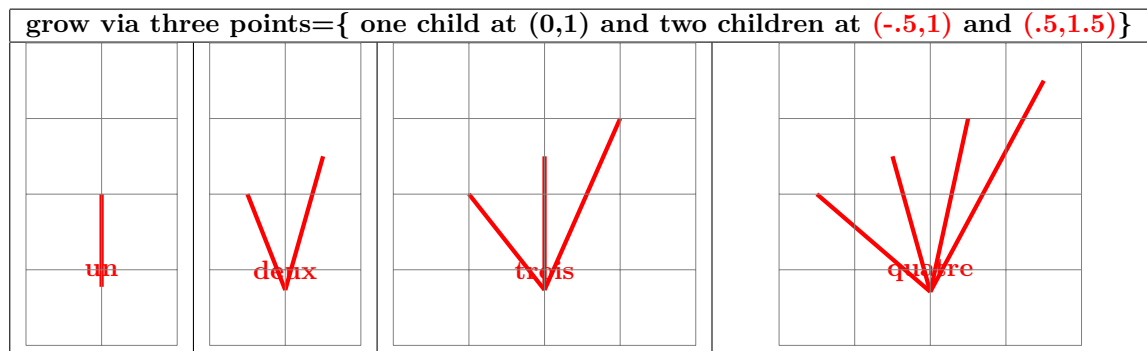
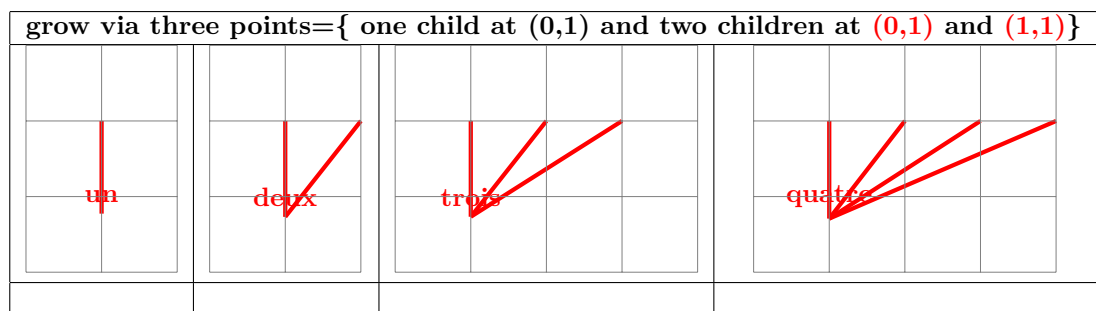
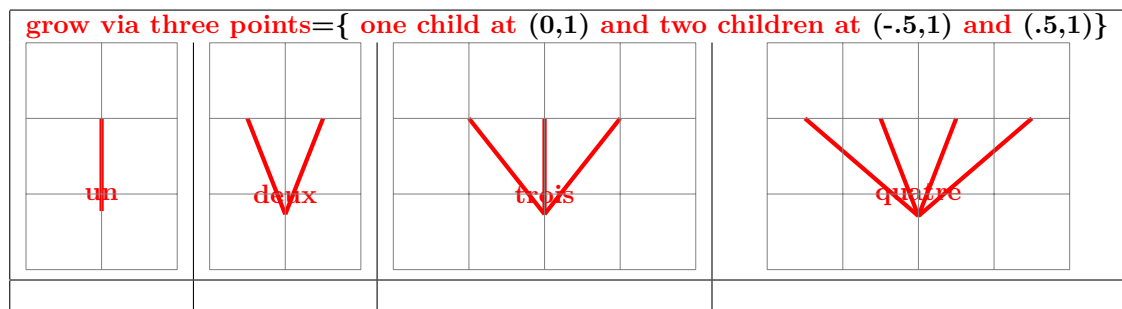
| | | |
|---|---|--|
| [edge from parent path= {(\tikzparentnode.south) .. controls +(0,-1) and +(0,1) .. (\tikzchildnode.north)}] | | |
|  |  |  |
| .. controls +(0,-1) and +(0,1) .. | - | to[in=90,out=-90] |
| voir liaison de noeuds section 7.2 | | |

27.7 Options supplémentaires avec « library trees »

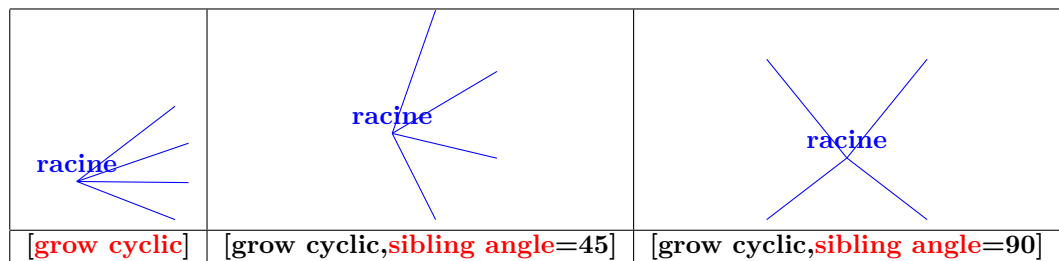
Charger l'extension: `\usetikzlibrary{trees}`

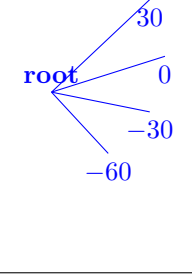
PGFmanual section : 72

27.7.1 Positions d'un fils et de deux fils

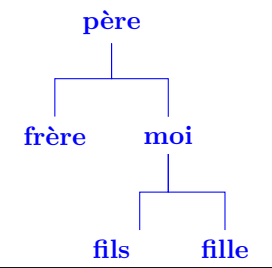


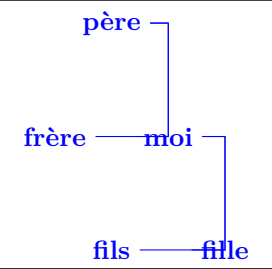
27.7.2 Liaison angulaire

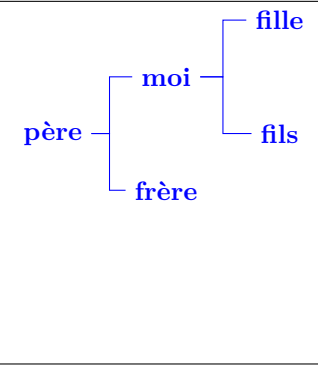


| | |
|---|--|
|  | <pre> \mode {racine} [clockwise from=30,sibling angle=30] child {node {\$30\$} } child {node {\$0\$} } child {node {\$-30\$} } child {node {\$-60\$} };</pre> |
|---|--|

27.7.3 Liaisons en fourchette

| | |
|---|--|
|  | <pre> \mode {père} [edge from parent fork down] child {node {frère}} child {node {moi}} child [child anchor=north east] {node {fils}} child {node {fille}} };</pre> |
|---|--|

| | |
|--|---|
|  | <pre> \mode {père} [edge from parent fork right] child {node {frère}} child {node {moi}} child {node {fils}} child {node {fille}} };</pre> |
|--|---|

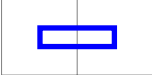
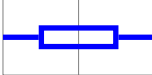
| | |
|---|--|
|  | <pre> \mode {père} [edge from parent fork right,grow=right] child {node {frère}} child {node {moi}} child {node {fils}} child {node {fille}} };</pre> |
|---|--|

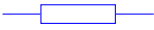
















28 Les schemas électriques










Charger l'extension: `\usepackage{circuits.ee.IEC}`

28.1 Symboles

PGFmanual section : 47-4

| sur un noeud | sur un chemin |
|---|---|
|  |  |
| <code>\node [circuit ee IEC] at (1,0.5) to [resistor] {} ;</code> | <code>\draw [circuit ee IEC](0,0.5) to [resistor] (2,.5) ;</code> |

| Composants de base | | | |
|---|---|---|--|
| <code>\draw [circuit ee IEC] (0,.5) to [resistor] (2,.5) ;</code> | | | |
| PGFmanual section : 47-4-3 | | | |
|  |  |  |  |
| [resistor] | [inductor] | [capacitor] | [battery] |
|  |  |  |  |
| [bulb] | [current source] | [voltage source] | [ground] |
| PGFmanual section : 47-4-4 | | | |
|  |  |  |  |
| [diode] | [Zener diode] | [Schottky diode] | [tunnel diode] |
|  |  | | |
| [backward diode] | [breakdown diode] | | |
| PGFmanual section : 47-4-5 | | | |
|  |  |  | |
| [contact] | [make contact] | [break contact] | |

| Autre apparence | | |
|---|---|---|
| <code>\draw [circuit ee IEC,set resistor graphic=var resistor IEC graphic] (0,0.5) to [resistor] (2,0.5) ;</code> | | |
|  |  |  |
| resistor | inductor | diode |
|  |  |  |
| Zener diode | Schottky diode | tunnel diode |
|  |  |  |
| backward diode | breakdown diode | make contact |

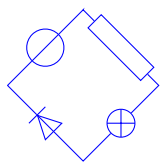
| Taille des symboles | | | | |
|---|--------------------------------|---------------------------------|--------------------------------|-------------------------------|
| <div>PGFmanual section : 47-2-1</div> | | | | |
| \draw [circuit ee IEC] (0,0.5) to [diode,large circuit symbols] (2,0.5) ; | | | | |
| | | | | |
| huge circuit symbols (10pt) | large circuit symbols (8pt) | medium circuit symbols (7pt) | small circuit symbols (6pt) | tiny circuit symbols (5pt) |

| | | |
|--|--------------------------------------|--|
| \draw [circuit ee IEC,circuit symbol unit=14pt] (0,0.5) to [diode] (2,0.5) ; | | |
| | | |
| circuit symbol unit=14pt | circuit symbol size=width 3 height 1 | circuit symbol size=width 1 height 5 <div>ne fonctionne pas !</div> |



| Création de nouveaux symboles | | | |
|---|--|------------|----------------------|
| <div>PGFmanual section : 47-2-2</div> | | | |
| | \begin{tikzpicture} [circuit declare symbol=xxx, set xxx graphic={draw,shape=rectangle,minimum size=5mm}] \node [xxx] at (.5,.5) ; \draw[circuit ee IEC] (1,.5) to [xxx] (3,.5) ; \end{tikzpicture} | | |
| | | | |
| shape=circle | shape=dart | shape=star | shape=forbidden sign |
| voir les “different shape libraries”see the different shape libraries | | | |
















| Placement des symboles sur un chemin | |
|---|--|
| \draw [circuit ee IEC] (0,0.5) to [contact={at start},make contact={very near start},voltage source={near start},resistor, bulb={near end}, bulb={very near end},contact={at end}] (12,0.5) ; | |
| | |
| \draw [circuit ee IEC] (0,0.5) to [contact={pos=0},make contact={pos=0.2},voltage source={pos=0.3},resistor={pos=0.5}, bulb={pos=0.75},contact={pos=1}] (12,0.5) ; | |
| | |

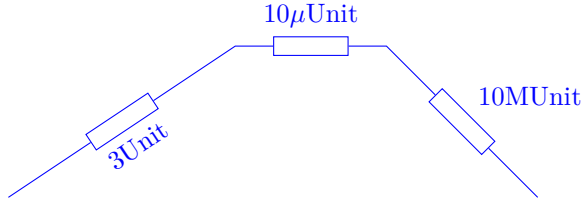
| Orientation des symboles | | | |
|--|--------------------|--------------------|---------------------|
| <div>PGFmanual section : 47-2-3</div> | | | |
| \node [circuit ee IEC] at (1,.5) [diode,point up] {} ; | | | |
| | | | |
| [diode,point up] | [diode,point down] | [diode,point left] | [diode,point right] |

| Orientation automatique | |
|---|---|
|  | <pre>\draw [circuit ee IEC] (0,0) to [voltage source] (1,1) to [resistor] (2,0) to [bulb] (1,-1) to [diode] (0,0) ;</pre> |

28.2 Annotations

| Sens du courant | |
|---|---|
| PGFmanual section : 47-4-2 | |
| <pre>\draw [circuit ee IEC] (0,0.5) to [current direction] (2,0.5) ;</pre> | |
|  |  |
| <code>[current direction]</code> | <code>[current direction']</code> |

| Unités disponibles | | | | |
|--|--|--|--|--|
| PGFmanual section : 47-4-6 | | | | |
| <pre>\node [draw,circuit ee IEC] at(1,.5) [ampere=5] {}</pre> | | | | |
| 5A  | 5V  | 5  | 5S  | 5H  |
| <code>[ampere=5]</code> | <code>[volt=5]</code> | <code>[ohm=5]</code> | <code>[siemens=5]</code> | <code>[henry=5]</code> |
| 5F  | 5C  | 5VA  | 5W  | 5Hz  |
| <code>[farad=5]</code> | <code>[coulomb=5]</code> | <code>[voltampere=5]</code> | <code>[watt=5]</code> | <code>[hertz=5]</code> |
| 5kA  | 5mA  | 5μA  | 5kW  | 5MW  |
| <code>[ampere=5k]</code> | <code>[ampere=5m]</code> | <code>[ampere=5\mu]</code> | <code>[watt=5k]</code> | <code>[watt=5M]</code> |



| créer sa propre unité | |
|---|--|
| PGFmanual section : 47-2-4 | |
| <pre>\tikz[circuit ee IEC,circuit declare unit={xxx}{ Unit}] \draw (0,0) to[resistor={xxx' sloped=3}] (3,2) to [resistor={xxx= 10\mu}] (5,2) to [resistor={xxx= 10M}]</pre> | |
|  | |









| Annotations | | | |
|---|----------------------------|---------------------------|-----------------------|
| PGFmanual section : 47-4-7 | | | |
| \draw [circuit ee IEC] (0,0.5) to [resistor=light emitting] (2,0.5) ; | | | |
| | | | |
| [resistor=light emitting] | [resistor=light dependent] | [resistor=direction info] | [resistor=adjustable] |
| | | | |
| [diode=light emitting] | [diode=light dependent] | [diode=direction info] | [diode=adjustable] |
| | | | |
| [diode=light emitting'] | [diode=light dependent'] | [diode=direction info'] | [diode=adjustable'] |


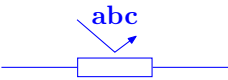

| Position des unités | |
|--|----------------------------------|
| PGFmanual section : 47-2-4 | |
| \draw [circuit ee IEC] (0,0) to [capacitor={farad=5\mu}] (2,2) ; | |
| | |
| [capacitor={farad=5\mu}] | [capacitor={farad'=5\mu}] |
| | |
| [capacitor={farad sloped=5\mu}] | [capacitor={farad' sloped=5\mu}] |

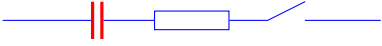
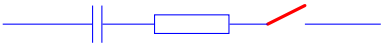

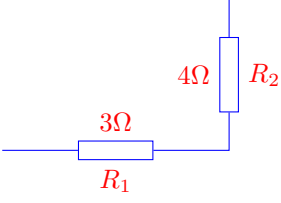
| Informations | | |
|--|-------------------------------------|-----------------------------------|
| PGFmanual section : 47-2-4 | | |
| \draw [circuit ee IEC] (0,0.5) to [diode={light emitting={info=D1}}] (2,0.5) ; | | |
| | | |
| [diode={light emitting={info=D1}}] | [diode={light emitting={info'=D2}}] | [diode={light emitting,info'=D3}] |

| sur un noeud | sur un chemin |
|--------------------------------------|--|
| | |
| [resistor,info=\$3\Omega\$,info'=R1] | [resistor={info=\$3\Omega\$,info'=R1}] |

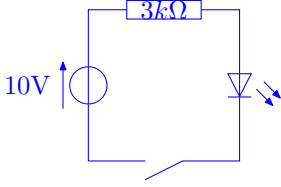
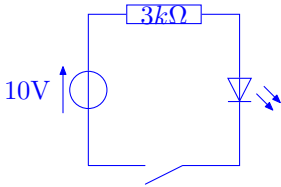
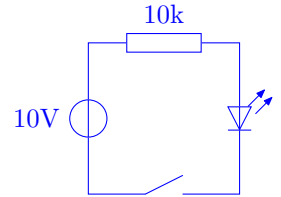
| | |
|---|---|
|  |  |
| <code>[resistor,point up,info=center:$\\$3\backslash\Omega$]</code> | <code>[resistor,point up,info=center:$\\$3\backslash\Omega$]</code> |

| <code>\node [voltage source,direction info=\{volt=10\}] {}</code> | | <code>\node [voltage source,direction info'=\{volt=10\}] {}</code> | |
|---|---|--|---|
|  |  |  |  |
| <code>\{volt=10\}</code> ou <code>\{->,volt=10\}</code> | <code>\{volt'=10\}</code> ou <code>\{->,volt'=10\}</code> | <code>\{volt=10\}</code> ou <code>\{->,volt=10\}</code> | <code>\{volt'=10\}</code> ou <code>\{->,volt'=10\}</code> |
|  |  |  |  |
| <code>\{<-,volt=10\}</code> | <code>\{<-,volt=10\}</code> | <code>\{<-,volt=10\}</code> | <code>\{<-,volt'=10\}</code> |

| Créer sa propre annotation PGFmanual section : 47-2-5 | |
|---|---|
|  | <code>\tikzset{circuit declare annotation=\{XXX\}{9pt}</code> <code>{ (-0.5cm,0.5cm) edge[to path={- -(0pt,2pt) - - (8pt,8pt)}] ()} }</code> <code>\tikz[blue,circuit ee IEC] \draw (0,0) to [resistor=XXX] (3,0);</code> |
|  | <code>\tikzset{circuit declare annotation=\{xxx\}{9pt}}</code> <code>{ (-0.5cm,0.5cm) edge[to path={- -(0pt,2pt) - - (8pt,8pt)}] ()} }</code> <code>\tikz[blue,circuit ee IEC] \draw (0,0) to [resistor=\{xxx={info=abc}\}] (3,0);</code> |
|  | <code>\tikzset{circuit declare annotation=\{xxx\}{1cm}}</code> <code>{ (-0.5,0.5) edge[to path={- -(0pt,2pt) - - (8pt,8pt)}] ()} }</code> <code>\tikz[blue,circuit ee IEC] \draw (0,0) to [resistor=\{xxx={info=abc}\}] (3,0);</code> |

| | |
|--|---|
| <p>Style des symboles</p> <p>PGFmanual section : 47-2-6</p> | |
| <pre>\draw[circuit symbol lines/.style={draw,red,very thick}] (0,0) to [capacitor={near start},resistor, make contact={near end}] (5,0);</pre> | |
|  | |
| <pre>\draw[circuit symbol wires/.style={draw,red,very thick}] (0,0) to [capacitor={near start},resistor, make contact={near end}] (5,0);</pre> | |
|  | |
| <pre>\draw[circuit symbol open/.style={thick,draw,red,fill=yellow}] (0,0) to [capacitor={near start},resistor, make contact={near end}] (5,0);</pre> | |
|  | |
| <pre>\tikz[blue,circuit ee IEC,every info/.style=red] \draw (0,0) to[resistor={info={\$3\Omega\$},info'={\$R_1\$}}] (3,0) to[resistor={info={\$4\Omega\$},info'={\$R_2\$}}] (3,2);</pre> |  |
| <pre>every info/.style=red</pre> | <pre>every info/.style={font=\tiny}</pre> |

28.3 Exemple

| 3 méthodes pour le même schéma | |
|--|--|
|  | <pre> \begin{tikzpicture}[blue,circuit ee IEC] \draw (0,0) to [voltage source={direction info={->,volt=10}}] (0,2) to [resistor={info=center:\$3\text{ k}\Omega\$}] (2,2) to [diode=light emitting] (2,0) to [make contact] (0,0); \end{tikzpicture} </pre> |
|  | <pre> \begin{tikzpicture}[blue,circuit ee IEC] \draw (0,0) to [voltage source={direction info={->,volt=10}}] ++(up:2) to [resistor={info=center:\$3\text{ k}\Omega\$}] ++(right:2) to [diode=light emitting] ++(down:2) to [make contact] ++(left:2) ; \end{tikzpicture} </pre> |
|  | <pre> \begin{tikzpicture}[blue,circuit ee IEC] \node (A) at (0,1) [voltage source,point up,volt=10]{}; \node (B) at (1,2) [resistor,ohm=10k]{}; \node (C) at (2,1) [diode=light emitting,point down]{}; ; \node (D) at (1,0) [make contact]{}; \draw (A) - (B) - (C) - (D) - (A); \end{tikzpicture} </pre> |

29 Les circuits logiques

International Electrotechnical Commission :

























Charger l'extension: `\usepackage{circuits.logic.IEC}`




American logic gates :










Charger l'extension: `\usepackage{circuits.logic.US}`



logic symbols used in A. Croft, R. Davidson, and M. Hargreaves (1992), Engineering Mathematics, Addison-Wesley, 82–95 :

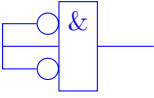
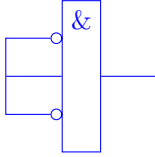
Charger l'extension: `\usepackage{circuits.logic.CDH}`




| Composants de base | | |
|--|---|---|
| <code>\node [circuit logic IEC] at (1,5) [and gate] {A} ;</code> PGFmanual section : 47-3-2 | | |
|  |  |  |
| [circuit logic IEC] and gate | [circuit logic US] and gate | [circuit logic CDH] and gate |
|  |  |  |
| [circuit logic IEC] nand gate | [circuit logic US] nand gate | [circuit logic CDH] nand gate |
|  |  |  |
| [circuit logic IEC] or gate | [circuit logic US] or gate | [circuit logic CDH] or gate |
|  |  |  |
| [circuit logic IEC] nor gate | [circuit logic US] nor gate | [circuit logic CDH] nor gate |
|  |  |  |
| [circuit logic IEC] xor gate | [circuit logic US] xor gate | [circuit logic CDH] xor gate |
|  |  |  |
| [circuit logic IEC] xnor gate | [circuit logic US] xnor gate | [circuit logic CDH] xnor gate |
|  |  |  |
| [circuit logic IEC] not gate | [circuit logic US] not gate | [circuit logic CDH] not gate |
|  |  |  |
| [circuit logic IEC] buffer gate | [circuit logic US] buffer gate | [circuit logic CDH] buffer gate |




| Avec etiquette | | |
|--|---|---|
| \node [circuit logic IEC] at (1,.5) [and gate] {A} ; PGFmanual section : 47-3-1 | | |
|  |  |  |
| [circuit logic IEC] | [circuit logic US] | [circuit logic CDH] |

| Orientation | | |
|--|--|--|
| PGFmanual section : 47-3-1 | | |
| \node [circuit logic IEC] at (1,.5) [and gate,point down] {A} ; | | |
|  |  |  |
| [circuit logic IEC] | [circuit logic US] | [circuit logic CDH] |
| \node [circuit logic IEC] at (1,.5) [and gate,point up] {A} ; | | |
|  |  |  |
| [circuit logic IEC] | [circuit logic US] | [circuit logic CDH] |
| \node [circuit logic IEC] at (1,.5) [and gate,point left] {A} ; | | |
|  |  |  |
| [circuit logic IEC] | [circuit logic US] | [circuit logic CDH] |

| Entrées sortie | |
|---|--|
| PGFmanual section : 47-3-3 | |
|  | \node [and gate IEC, draw, logic gate inputs={inverted ,normal , inverted }] at (1,.5) (A) {}; \draw [red] (A.input 1) - (0,0.5); \draw[green] (A.input 2) - (0,0.5); \draw[cyan] (A.input 3) - (0,0.5); \draw (A.output) - (2,0.5); |
|  | \node [and gate IEC, draw, logic gate inputs={ini}] at (1,.5) (A) {}; \draw [red] (A.input 1) - (0,0.5); \draw[green] (A.input 2) - (0,0.5); \draw[cyan] (A.input 3) - (0,0.5); \draw (A.output) - (2,0.5); |

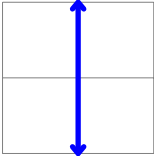
| Paramètres des entrées | |
|--|---|
| <pre>\node [and gate IEC, draw, logic gate inputs=ini,logic gate inverted radius=4pt] at (1,.5) (A) {};</pre> <p>PGFmanual section : 47-3-3</p> | |
|  |  |
| logic gate inverted radius=4pt | logic gate input sep=0.5cm |

| Paramètres des symboles | | |
|---|---|---|
| <pre>\node [circuit logic IEC,and gate IEC symbol=AND] at (1,.5) [and gate] {}</pre> <p>PGFmanual section : 47-3-5</p> | | |
|  |  |  |
| and gate IEC symbol =AND | logic gate IEC symbol color =red | logic gate IEC symbol align ={bottom, right} |

| Paramètres des composants | | |
|--|---|---|
| <pre>\node [circuit logic IEC,very thick] at (1,.5) [and gate] {}</pre> <p>PGFmanual section : 47-3-5</p> | | |
|  |  |  |
| very thick | fill=blue!10 | fill=blue!10, logic gate IEC symbol color=black |









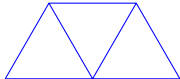


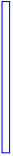





30 Optique

Charger l'extension: `\usepackage{optics}` [7]

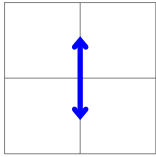
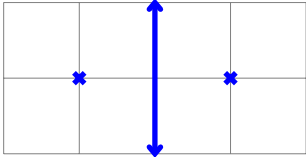
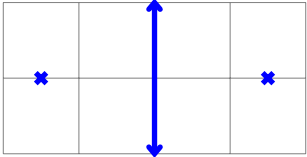
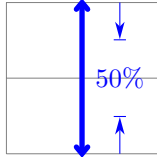
| | |
|---|---|
|  | <pre>\begin{tikzpicture}[blue,line width=2pt] \draw[help lines] (-1,-1) grid (1,1); \node[use optics,lens] (L) at (0,0) ; \end{tikzpicture}</pre> |
|---|---|



30.1 Éléments optiques

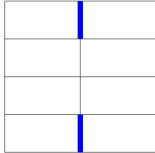
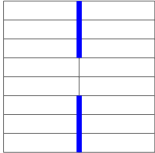
30.1.1 Éléments optiques disponibles

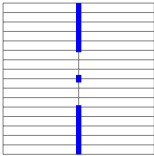
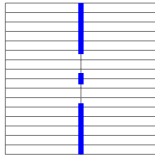
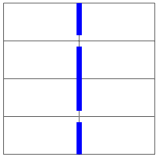
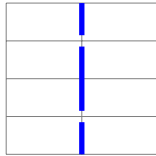
| Éléments optiques | | | | |
|---|---|---|---|---|
| \tikz[use optics,blue] \node[lens] (L) at (0,0) {}; | | | | |
|  |  |  |  | |
| lens | slit | double slit | mirror | |
|  |  |  |  |  |
| convex mirror | concave mirror | polarizer | beam splitter | double amici prism |
|  |  |  |  | |
| thin optics element | thick optics element | heat filter | screen | |
|  |  |  |  | |
| diffraction grating | grid | semi-transparent mirror | diaphragm | |

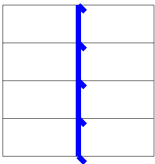
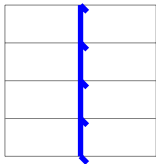
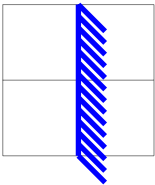
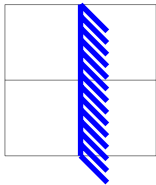
30.1.2 Paramètres

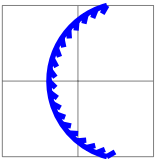
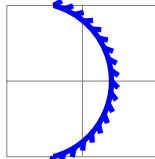
| \node[lens,object height=1cm] (L) at (0,0) {}; | | | |
|---|---|--|---|
|  |  |  |  |
| object height=1cm Par défaut : 2cm | draw focal points Par défaut : empty | focal length=1.5cm Par défaut : 1cm | focal height=0.5 Par défaut : 0.8 (80%) |

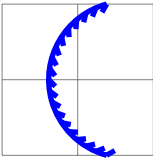
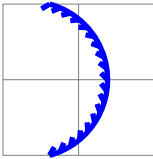
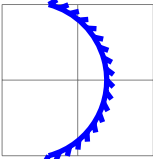
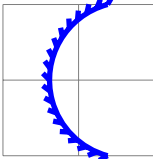
| Lens type | |
|---|---|
| \node[lens,lens type=converging] (L) at (0,0) {}; | |
|  |  |
| lens type=converging | lens type=diverging |

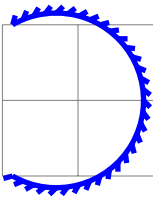
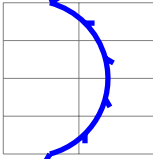
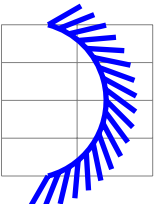
| slit parameters | |
|--|---|
| \node[slit,slit height=0.5] (L) at (0,0) {}; | |
|  |  |
| slit height=0.5 | slit height=0.5cm |
| Par défaut : 0.075 (7.5%) | |

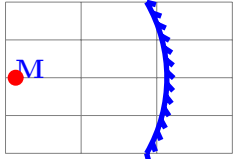
| Double slit parameters | | | |
|---|---|---|---|
| \node[double slit,slit height=0.15] (L) at (0,0) {}; | | | |
|  |  |  |  |
| slit height=0.15 | slit height=0.25cm | slit separation=0.5 | double slit, slit separation=1cm |
| Par défaut : 0.075 (7.5% x 2cm = 1.5 mm) | | Par défaut : 0.2 (20% x 2cm = 4mm) | |

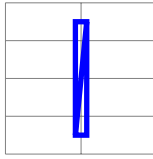
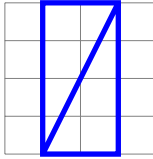
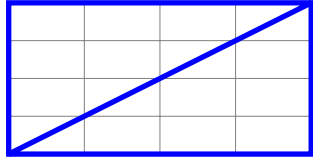
| mirror parameters | |
|---|---|
| \node[mirror,mirror decoration separation=0.25] (L) at (0,0) {}; | |
|  |  |
| mirror decoration separation=0.25 | mirror decoration separation=0.5cm |
| Par défaut : 0.15cm | |
|  |  |
| mirror decoration amplitude=0.25 | mirror decoration amplitude=1cm |
| Par défaut : 0.125cm | |

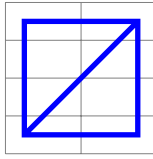
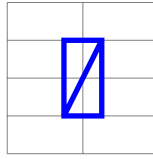
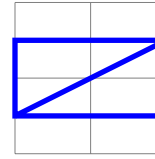
| spherical mirror type | |
|---|---|
| \node[convex mirror](L) at (0,0) {}; | |
|  |  |
| convex mirror | concave mirror |
| spherical mirror, spherical mirror type=convex | spherical mirror, spherical mirror type=concave |

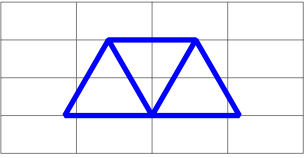
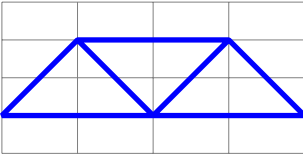
| spherical mirror orientation | |
|---|---|
| \node[convex mirror, spherical mirror orientation=ltr](L) at (0,0) {}; | |
|  |  |
| convex mirror, spherical mirror orientation=ltr | convex mirror, spherical mirror orientation=rtl |
|  |  |
| concave mirror spherical mirror orientation=ltr | concave mirror, spherical mirror orientation=rtl |

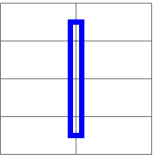
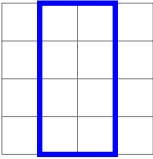
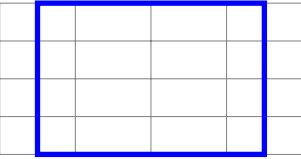
| \node[spherical mirror, spherical mirror angle=240](L) at (0,0) {}; | | |
|--|--|--|
|  |  |  |
| spherical mirror angle=240 Par défaut : 150 | mirror decoration separation=0.25 Par défaut : 0.15cm | mirror decoration amplitude=0.5cm Par défaut : 0.125cm |

| \node[spherical mirror, spherical mirror angle=from_radius(2cm)](L) at (0,0) {}; | |
|---|--|
|  | |






| \node[polarizer, object height=1.5cm](L) at (0,0) {}; | | |
|---|---|--|
|  |  |  |
| object height=1.5cm Par défaut : 2cm | object aspect ratio=0.5 Par défaut : 0.2 | object aspect ratio=2 |




| \node[beam splitter, object height=1.5cm](L) at (0,0) {}; | | |
|---|---|---|
|  |  |  |
| object height=1.5cm | object aspect ratio=.5 | object aspect ratio=2 |







| \node[double amici prism,prism height=1cm](L) at (0,0) {}; | |
|---|---|
|  |  |
| prism height=1cm | prism apex angle=90 |
| Par défaut : 1.5cm | Par défaut : 60 |

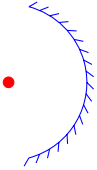






| \node[thick optics element,object height=1.5cm](L) at (0,0) {}; | | |
|---|---|--|
|  |  |  |
| object height=1.5cm | object aspect ratio=0.5 | object aspect ratio=1.5 |

30.1.3 Ancres

| \node[lens](L) at (0,0) {} ; \node[red,fill](L.lens north) circle (2pt) ; | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| (L.lens north) | (L.lens south) | (L.east focus) | (L.west focus) | (L.center) |


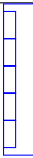



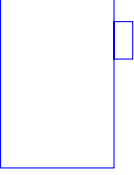


| \node[slit, slit height=0.5](L) at (0,0) {} ; \node[red,fill](L.slit north) circle (2pt) ; | | |
|---|---|---|
|  |  |  |
| (L.slit north) | (L.slit south) | (L.slit center) |

| \node[double slit,slit height=0.2,slit separation=0.5](L) at (0,0) {} ; \node[red,fill](L.slit 1 north) circle (2pt) ; | | | | | |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| (L.slit 1 north) | (L.slit 1 south) | (L.slit 1 center) | (L.slit 2 north) | (L.slit 2 south) | (L.slit 2 center) |

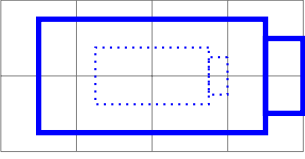
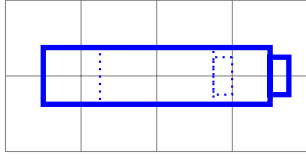
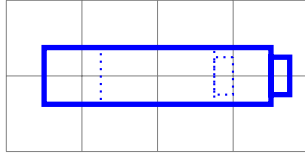
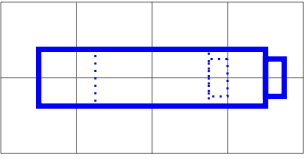
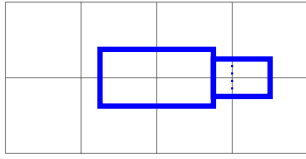
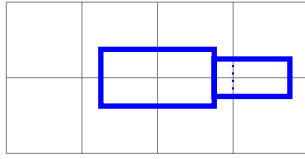
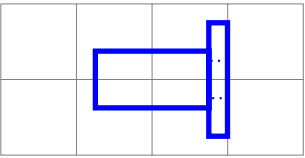
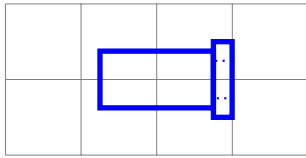
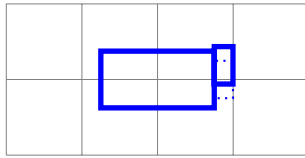
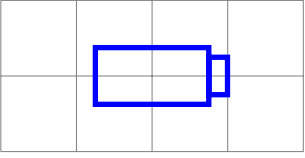
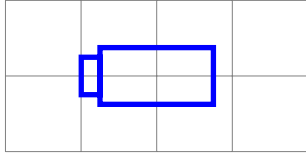
| | | | | | | |
|--|---|---|---|---|---|---|
| \backslash node[spherical mirror] (L) at (0,0) {}; \backslash node[red,fill] (L.mirror center) circle (2pt) ; | | | | | | |
|  |  |  |  |  |  |  |
| L.mirror center | L.focus | L.arc start | L.arc center | L.arc end | L.45 | L.-45 |

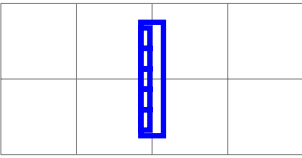
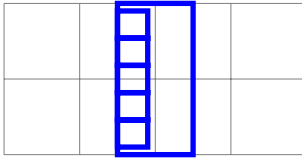
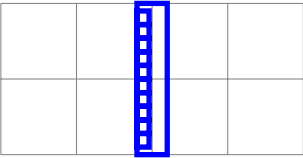
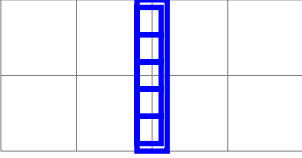
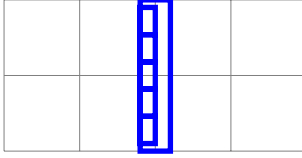
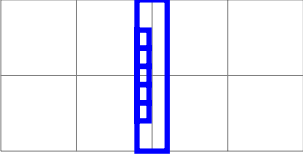
30.2 Lampes et capteurs

30.2.1 Disponibles

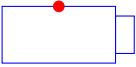
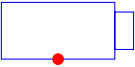
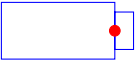
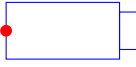



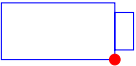
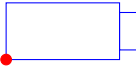









| | | | |
|---|--|---|--|
| \backslash tikz[use optics,scale=.5,blue] \backslash node[generic optics io] (L) at (0,0) {}; | | | |
|  |  |  |  |
| generic optics io | sensor line | generic sensor | generic lamp |
|  |  |  |  |
| halogen lamp | spectral lamp | laser | laser' |

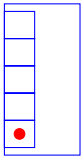
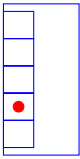
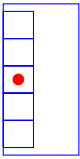
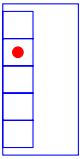
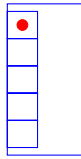
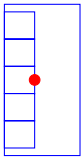
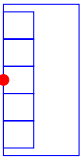
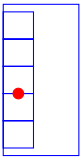
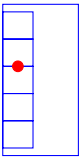
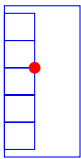
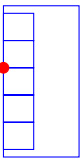
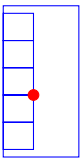
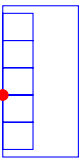
30.2.2 Paramètres

| | | |
|---|---|---|
| \node[generic optics io , io body height =1.5cm](L) at (0,0) {}; | | |
| Paramètres applicables pour generic sensor , generic lamp , halogen lamp , spectral lamp , laser | | |
|  |  |  |
| io body height =1.5cm Par défaut : 0.75cm | io body aspect ratio =4 Par défaut : 2 | io body width =4 |
|  |  |  |
| io body width =3cm | io aperture width =1 | io aperture width =1cm |
| | Par défaut : 0.33 | |
|  |  |  |
| io aperture height =2 | io aperture height =1cm | io aperture shift =0.25 |
| Par défaut : 0.66 | | Par défaut : 0 |
|  |  | |
| io orientation =ltr | io orientation =rtl | |
| Par défaut : ltr | | |

| | | |
|---|---|---|
| \node[sensor line, sensor line height =1.5cm](L) at (0,0) {}; | | |
|  |  |  |
| sensor line height =1.5cm Par défaut : 2cm | sensor line aspect ratio =0.5 Par défaut : 0.2 | sensor line pixel number =10 Par défaut : 5 |
|  |  |  |
| sensor line pixel width =0.8 | sensor line pixel width =0.2cm | sensor line inner ysep =0.2 |
| Par défaut : 0.4 | | Par défaut : 0.05 |

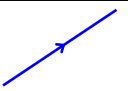
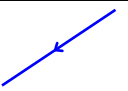
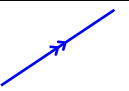



30.2.3 Points d’ancrages

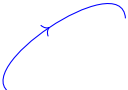
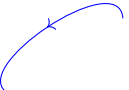
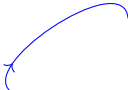
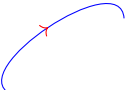
| | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| s.body north | s.body south | s.body east | s.body west | s.body cent |
|  |  |  |  | |
| s.body north east | s.body north west | s.body south east | s.body south west | |
|  |  |  |  |  |
| s.aperture north | s.aperture south | s.aperture east | s.aperture west | s.aperture cen |
|  |  |  |  | |
| s.aperture north east | s.aperture north west | s.aperture south east | s.aperture south west | |


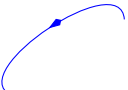

| | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| s.pixel 1 center | s.pixel 2 center | s.pixel 3 center | s.pixel 4 center | s.pixel 5 center |
|  |  |  |  | |
| s.pixel 3 east | s.pixel 3 west | s.pixel 3 south | s.pixel 3 north | |
|  |  |  |  | |
| s.pixel 3 north east | s.pixel 3 north west | s.pixel 3 south east | s.pixel 3 south west | |

30.3 Outils

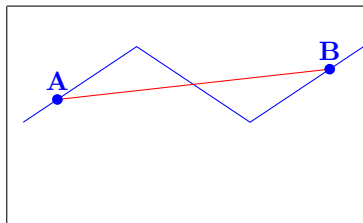
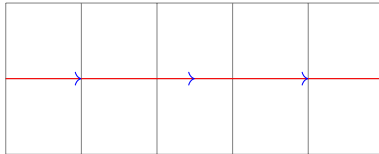
30.3.1 Marquer des rayons

| | | | | | |
|---|---|---|---|---|--|
| \draw [->-] (0,0) -- (1.5,1; | | | | | |
|  |  |  |  |  |  |
| [->-] | [-<-] | [-> >-] | [->n={n=4}] | [->n={n=5,at=0.25}] | [-> >-=at=0.25, ->-=at=0.75] |

| | | | |
|---|---|---|---|
| \draw [put arrow] (0,0) to[bend left=120] (2,0); | | | |
|  |  |  |  |
| [put arrow] | [put arrow={arrow'}] | [put arrow={at=0.2}] | [put arrow={style=red}] |

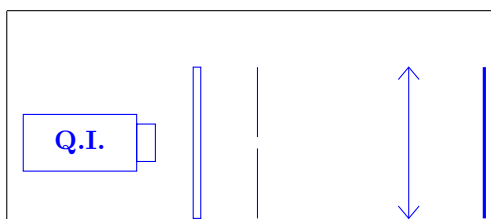
| | | |
|---|---|---|
|  |  |  |
| [red,put arrow={arrow=latex}] | [put arrow={arrow'=Kite}] | [put arrow={pos=.25}] |
| | | Par défaut : pos=0.5 |

```
\draw[red, put arrow/every arrow/.style={blue}, put arrow={at=0.2},
put arrow={at=0.5}, put arrow={at=0.8}] (0,0) -- (5,0);
```



```
\begin{tikzpicture}[use optics,blue]
\draw[put coordinate=A at 0.1,put coordinate=B at 0.9]
(0,0) -- (1.5,1) -- (3, 0) -- (4.5,1);
\draw[red] (A) -- (B);
\fill(A) circle (2pt) node[above] {A} ;
\fill(B) circle (2pt) node[above] {B} ;
\end{tikzpicture}
```

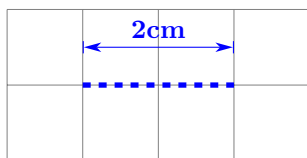
Point A à 10% , point B à 90%



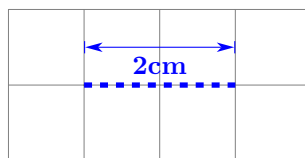
```
\begin{tikzpicture}[use optics]
\node[halogen lamp] (quartz iode) at (0,0) {Q.I.};
\node[heat filter,right=0.5cm of quartz iode.aperture east]
(AC) {};
\node[slit,right=0.75cm of AC] (fente) {};
\node[lens,right=2cm of fente] (L) {};
\node[screen,right=3cm of fente] (screen) {};
\end{tikzpicture}
```

30.3.2 Cotation

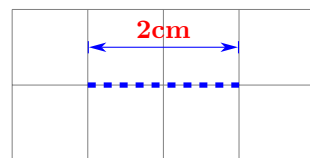
```
\draw (0,0) to[short dim arrow={label=2cm}] (2,0);
```



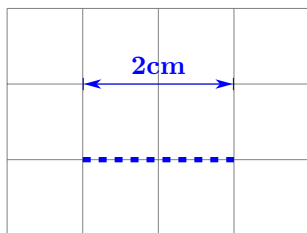
[**dim arrow**=**{label=2cm}**]



to[**dim arrow**=**{label'=2cm}**]

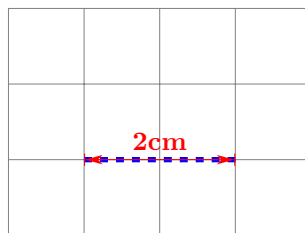


[**dim arrow**=**{label=2cm**
label style/.append style=r

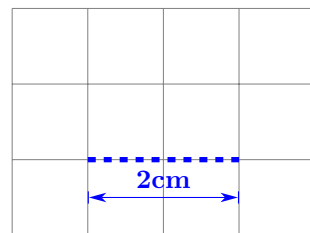


[**dim arrow**=**{label=2cm,raise=1cm}**]

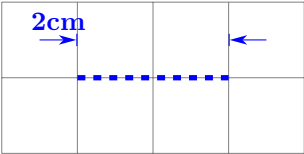
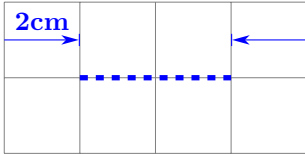
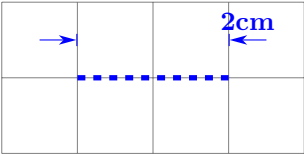
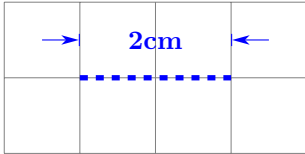
Par défaut : raise = 0.5cm



[**dim arrow**=**{label=2cm,no raise},red]**





[**dim arrow'**=**{label=2cm**

| | |
|---|--|
| \draw (0,0) to[short dim arrow={label=2cm}] (2,0); | |
|  |  |
| [short dim arrow={label=2cm}] | [short dim arrow={label=2cm,arrow length=1cm}] |
| | Par défaut : arrow length= 5mm |
|  |  |
| [short dim arrow={label=2cm,label near end}] | [short dim arrow={label=2cm,label near middle}] |
| Par défaut : label near start | |

31 Les animations

Charger l'extension: `\usepackage{animate}` [6]

31.1 Animation à partir de fichiers d'image

| première image | seconde et dernière image |
|---|---|
|  |  |
| <code>\includegraphics{XXX1}</code> | <code>\includegraphics{XXX2}</code> |

| <code>\animategraphics:</code> | |
|--------------------------------|-----------------------------------|
| <code>[controls,</code> | <code>:boutons de contrôle</code> |
| <code>loop</code> | <code>:en boucle</code> |
| <code>autoplay]</code> | <code>:auto démarrage</code> |
| <code>{4}</code> | <code>:4 fois par seconde</code> |
| <code>{XXX}</code> | <code>:base du nom fichier</code> |
| <code>{1}</code> | <code>:numero de début</code> |
| <code>{2}</code> | <code>:numero de fin</code> |

31.2 Animateinline

```
\begin{animateinline}[controls,loop,autoplay]{5}

% première image
\begin{tikzpicture} \fill[blue] (45:2) - - (135:.5) - - (225:2) - - (315:.5)
- - cycle; \fill[blue] (45:.5) - - (135:2) - - (225:.5) - - (315:2) - - cycle;
\end{tikzpicture}
% deuxième
\newframe
\begin{tikzpicture}
\fill[blue] (0:2) - - (90:.5) - - (180:2) - - (270:.5) - - cycle;
\fill[blue] (0:.5) - - (90:2) - - (180:.5) - - (270:2) - - cycle;
\end{tikzpicture}

\end{animateinline}
```

31.3 Multiframe

```
\begin{animateinline}[poster=first,controls, palindrome]{12}
\multiframe{29}{iAngle=80+10, Rdim=2.0+-0.2}{
\begin{tikzpicture}
\fill[blue] (\iAngle+45:\Rdim) - - (\iAngle+135:.5) - -
(\iAngle+225:\Rdim) - - (\iAngle+315:.5) - - cycle;
\fill[blue] (\iAngle+45:.5) - - (\iAngle+135:\Rdim) - - (\iAngle+225:.5) - - (\iAngle+315:\Rdim) - - cycle;
\end{tikzpicture} }
\end{animateinline}
```

L'initiale de la variable définit son type

| | |
|-----------|-------------------------|
| entier | initiale : i ou I |
| réelles | initiale : n, N, r ou R |
| longueurs | initiale : d ou D |

```
\begin{animateinline}[autoplay,loop]{12}
\multiframe{24}{iAngle=0+15,icol=0+5}{\begin{tikzpicture}
\draw[line width=0pt] (-2,-3) rectangle(6,3);
\draw (0,0) node[fill=white,circle,rotate=\iAngle]
{\includegraphics[width=2cm]{LogoIUT}} (0,0) circle (1);
\draw (0,0) circle (1);
\coordinate (abc) at ($\sqrt{9-\sin(\iAngle)*\sin(\iAngle))+\cos(\iAngle)}*(1,0)$);
;
\coordinate (xyz) at (\iAngle:1);
\draw[ultra thick] (0,0) - -(xyz);
\draw[ultra thick] (xyz) - - (abc) ;
\fill[color=blue!\icol] (abc)++(0.5,-1) rectangle (5,1) ;
\draw[ultra thick] (abc) ++(0,-1) rectangle ++(.5,2) ;
\draw[ultra thick] (1.5,1) - - (5,1) - - (5,-1) - - (1.5,-1);
\fill[red] (xyz) circle (4pt);
\fill[red] (abc) circle (4pt);
\end{tikzpicture}}
\end{animateinline}
```

Charger l'extension: `\usepackage{tkz-tab}` [3]

31.4 Déclaration du tableau

| | | | |
|----------|---|---|---|
| 1° ligne | a | b | c |
| 2° ligne | | | |

```
\begin{tikzpicture}
\tkzTabInit{1° ligne / 1 ,2° ligne /1 } { a , b, c }
\end{tikzpicture}
```

31.4.1 Options

| Hauteur des ligne | | |
|-------------------|---|-----|
| 1° ligne | a | b c |
| 2° ligne | | |
| 3° ligne | | |

`\tikz \tkzTabInit{1° ligne '/1 , 2° ligne /.5 , 3° ligne /1.5 }{a , b , c };`

| Largeur de la première colonne | | |
|--------------------------------|---|-----|
| x | a | b c |

`\tkzTabInit[lgt=4]{ x / 1}{ a , b , c };`
Par défaut : : lgt==2 cm

| Espaceur entre deux valeurs | | |
|-----------------------------|---|-----|
| x | a | b c |

`\tkzTabInit[espcl=1]{ x / 1}{ a , b , c };`
Par défaut : : espcl=2 cm

| Marge de début et de fin | | |
|--------------------------|---|-----|
| x | a | b c |

`\tkzTabInit[deltacl=1]{ x / 1}{ a , b , c };`
Par défaut : : deltacl=0.5 cm

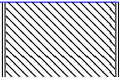
| Épaisseur des lignes du tableau | | | |
|---|---|---|---|
| x | a | b | c |
| $\backslash\mathrm{tkzTabInit}[\mathrm{dlw}=2\mathrm{pt}]\{x / 1\}\{a, b, c\};$ Par défaut : : lw=0,4 pt | | | |

| Absence de cadre | | | |
|--|---|---|---|
| x | a | b | c |
| $\backslash\mathrm{tkzTabInit}[\mathrm{nocadre}]\{x / 1\}\{a, b, c\};$ Par défaut : : nocadre=false | | | |

| Mise en couleur | | | |
|---|---|------------------------------------|--|
| \tkzTabInit [color,colorT = yellow]{1°ligne/1 , 2°ligne/1}{ a , b } | | | |
| 1°ligne | a | b | |
| 2°ligne | | | |
| [color,colorT = yellow] | | [color,colorC = cyan] | |
| 1°ligne | a | b | |
| 2°ligne | | | |
| [color,colorL = green] | | [color,colorV = magenta] | |
| Par défaut : : color = false | | colorT=colorC=colorL=colorV =white | |

31.5 Création d’une ligne de signes

| | | | |
|--|---|---|---|
| x | a | b | c |
| $f(x)$ | 2 | 4 | |
| $\backslash\mathrm{tkzTabLine}\{t, 2,t,4,t\}$ | | | |
| x | a | b | c |
| $f(x)$ | 2 | 4 | |
| $\backslash\mathrm{tkzTabLine}\{d, 2,d,4,d\}$ | | | |
| x | a | b | c |
| $f(x)$ | 0 | 2 | 0 |
| $\backslash\mathrm{tkzTabLine}\{z, 2,z,4,z\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | 3 | 4 |
| $\backslash\mathrm{tkzTabLine}\{1, h, 3,4,5\}$ | | | |

| Exemple | | | | | |
|---------|-----------|------|---|------|-----------|
| x | $-\infty$ | -4 | 4 | 10 | $+\infty$ |
| $f(x)$ | \vdots | $+$ |  | $-$ | \vdots |

```

\begin{tikzpicture}
\tkzTabInit[espc1=1.5]{\$x\$ / 1 ,\$f(x)\$ /1 } {  $-\infty$  ,  $-4$  ,  $4$  ,  $10$  ,  $+\infty$  }
\tkzTabLine{ t,+ , d ,h ,d,-,z,+ }
\end{tikzpicture}

```

31.6 Création d'une ligne de variations

| | | | | | | | | | | | | | | | | | |
|---|---|------------------|-----|-----|--------|--------------------------------|------------------|--|---|-----|-----|-----|-----|--------|--------------------------------|------------------|--|
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow 2$ | | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow 2$ | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow 2$ | | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow 2$ | | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{+/1, -/2\}$ | $\backslash\text{tkzTabVar}\{-/1, +/2\}$ | | | | | | | | | | | | | | | | |
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \longrightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \longrightarrow 2$ | | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \longrightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \longrightarrow 2$ | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \longrightarrow 2$ | | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \longrightarrow 2$ | | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{-/1, -/2\}$ | $\backslash\text{tkzTabVar}\{+/1, +/2\}$ | | | | | | | | | | | | | | | | |
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$\parallel 1 \rightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $\parallel 1 \rightarrow 2$ | | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$\parallel 1 \rightarrow 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $\parallel 1 \rightarrow 2$ | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $\parallel 1 \rightarrow 2$ | | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $\parallel 1 \rightarrow 2$ | | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{+C/1, -/2\}$ | $\backslash\text{tkzTabVar}\{-C/1, +/2\}$ | | | | | | | | | | | | | | | | |
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow \parallel 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow \parallel 2$ | | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow \parallel 2$</td><td></td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow \parallel 2$ | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow \parallel 2$ | | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow \parallel 2$ | | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{-/1, -C/2\}$ | $\backslash\text{tkzTabVar}\{+/1, +C/2\}$ | | | | | | | | | | | | | | | | |
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow \text{hatched}$</td><td>$2$</td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow \text{hatched}$ | 2 | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow \text{hatched}$</td><td>$2$</td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow \text{hatched}$ | 2 | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow \text{hatched}$ | 2 | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow \text{hatched}$ | 2 | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{+H/1, -/2\}$ | $\backslash\text{tkzTabVar}\{-H/1, +/2\}$ | | | | | | | | | | | | | | | | |
| <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow 2$</td><td>hatched</td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow 2$ | hatched | | <table><tr><td>x</td><td>a</td><td>b</td><td>c</td></tr><tr><td>$f(x)$</td><td>$1 \rightarrow 2$</td><td>hatched</td><td></td></tr></table> | x | a | b | c | $f(x)$ | $1 \rightarrow 2$ | hatched | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow 2$ | hatched | | | | | | | | | | | | | | | |
| x | a | b | c | | | | | | | | | | | | | | |
| $f(x)$ | $1 \rightarrow 2$ | hatched | | | | | | | | | | | | | | | |
| $\backslash\text{tkzTabVar}\{-/1, -H/2\}$ | $\backslash\text{tkzTabVar}\{+/1, +H/2\}$ | | | | | | | | | | | | | | | | |

| | | | |
|--|---|-------------------|---|
| x | a | b | c |
| $f(x)$ | 1 | \longrightarrow | 2 |
| $\backslash\text{tkzTabVar}\{+\textcolor{red}{D}/1,-/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| $\backslash\text{tkzTabVar}\{-\textcolor{red}{D}/1,+/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
| $\backslash\text{tkzTabVar}\{-/1,-\textcolor{red}{D}/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| $\backslash\text{tkzTabVar}\{+/1,+\textcolor{red}{D}/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
| $\backslash\text{tkzTabVar}\{\textcolor{red}{D}+/1,-/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| $\backslash\text{tkzTabVar}\{\textcolor{red}{D}-/1,+/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \longrightarrow | 2 |
| $\backslash\text{tkzTabVar}\{-/1,\textcolor{red}{D}-/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| $\backslash\text{tkzTabVar}\{+/1,\textcolor{red}{D}+/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
| $\backslash\text{tkzTabVar}\{+\textcolor{red}{DH}/1,-/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| $\backslash\text{tkzTabVar}\{-\textcolor{red}{DH}/1,+/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
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| $\backslash\text{tkzTabVar}\{+\textcolor{red}{DH}/1,+/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
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| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| $\backslash\text{tkzTabVar}\{-\textcolor{red}{CH}/1,+/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \searrow | 2 |
| $\backslash\text{tkzTabVar}\{-/1,-\textcolor{red}{CH}/2\}$ | | | |
| x | a | b | c |
| $f(x)$ | 1 | \nearrow | 2 |
| $\backslash\text{tkzTabVar}\{+/1,+\textcolor{red}{CH}/2\}$ | | | |

| | | | |
|----------------------------------|-------------------|-------------------|---|
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +D-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -D+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -D-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +D+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +CD-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -CD+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -CD-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +CD+/2 , -/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
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| x | a | b | c |
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| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
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| x | a | b | c |
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| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
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| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ +/1 , -V-/2 , +/3 } | | | |
| x | a | b | c |
| $f(x)$ | 1 \rightarrow 2 | 2 \rightarrow 3 | |
| \tkzTabVar{ -/1 , +V+/2 , -/3 } | | | |

| Mise en évidence d'une valeur | | | |
|-------------------------------|---|---|---|
| x | a | b | c |
| $f(x)$ | 1 | 2 | 3 |

$\backslash\text{tkzTabVar}\{+/1, -V-/\colorbox{yellow}\{2\}, +/3\}$

| Variation sur plusieurs colonnes | | | |
|----------------------------------|---|-----|---|
| x | a | b | c |
| $f(x)$ | 1 | → 3 | |

$\backslash\text{tkzTabVar}\{-/1, \textcolor{red}{R}/, +/3\}$

| Valeurs intermédiaires | | | | | | | | | |
|------------------------------|--|-----------------------|--|--|------------------------------|--|--------------------------|--|--|
| x | | a A b | | | x | | a b A c | | |
| $f(x)$ | | 1 \xrightarrow{x} 3 | | | $f(x)$ | | 1 \xrightarrow{x} 3 | | |
| \tkzTabVal{1}{3}{0.25}{A}{x} | | | | | \tkzTabVal{1}{3}{0.75}{A}{x} | | | | |


| | | | | |
|--------|---|---|-----|---|
| x | a | A | b | c |
| | | ⋮ | | |
| $f(x)$ | 1 | x | → 3 | |







$\backslash\text{tkzTabVal}[\textcolor{red}{draw}]\{1\}\{3\}\{0.25\}\{A\}\{x\}$

| Ajout d'images | | | | | | | | | |
|----------------|---|-----|---|---|--------|---|-----|---|---|
| x | a | b | c | d | x | a | b | c | d |
| $f(x)$ | 1 | → 3 | | | $f(x)$ | 1 | → 3 | | |

$\backslash\text{tkzTabIma}\{1\}\{4\}\{\textcolor{red}{2}\}\{x\}$
 $\backslash\text{tkzTabIma}\{1\}\{4\}\{\textcolor{red}{3}\}\{x\}$

32 Les modules étudiés dans ce document

| module de base TikZ : | | |
|-----------------------|--------------------------------|---|
| nom | A insérer dans le préambule | documentation ¹ |
| tikz | <code>\usepackage{tikz}</code> | pgfmanual.pdf  |

| Autres modules | | |
|----------------|-----------|--|
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| animate | 188 | animate.pdf  |
| tikz-optics | 178 | tikz-optics.pdf  |
| pgfplots | 140 | pgfplots.pdf  |
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| tikzducks | 129 | tikzducks-doc.pdf  |
| tkz-tab | 189 | tkz-tab-screen.pdf  |








| Compléments optionnels (documentation : pgfmanual.pdf) | | |
|--|-----------|---|
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| arrows.meta | 20 | <code>\usetikzlibrary{arrows.meta}</code> |
| bending | 33 | <code>\usetikzlibrary{bending}</code> |
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| circuits.logic.CDH | 174 | <code>\usetikzlibrary{circuits.logic.CDH}</code> |
| fit | 52 | <code>\usetikzlibrary{fit}</code> |
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| decorations.markings | 106 | <code>\usetikzlibrary{decorations.markings}</code> |
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| shapes.symbols | 83 | <code>\usetikzlibrary{shapes.symbols}</code> |
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¹ voir dans le répertoire : `\texlive\2016\tesmf-dist\doc\generic\pgf`

² chercher dans le répertoire : `\texlive\2016\tesmf-dist\doc\latex`

| dans une prochaine mise à jour | |
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| [1] pgfmanual.pdf | version 3.0.1a | 1161 pages |  |
| [2] pgfplots.pdf | version 1.80 | 439 pages |  |
| [3] tkz-tab-screen.pdf | version 1.1c | 83 pages |  |
| [4] tikzpeople.pdf | 19 pages |  | |
| [5] tikzducks-doc.pdf | version 0.5a | 24 pages |  |
| [6] animate.pdf | 26 pages |  | |
| [7] tikz-optics.pdf | version 0.2.2 | 39 pages |  |

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