Visuel Tikz

Version 0.50

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Objectif :
— Une image par commande ou par paramètre.
— Le texte réduit au strict minimum.
— 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 concernés. Voir la documentation pour aller plus loin

Source documentaire : pgfmanual.pdf pour commencer. La liste complète des sources se trouve page 107.

Pour me contacter Vous pouvez me contacter à mon e-mail personnel pour
— me signaler les erreurs que vous avez constatés
— me faire part de vos commentaires, suggestions …

Merci à :
Till Tantau

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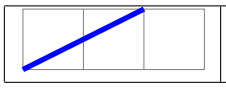
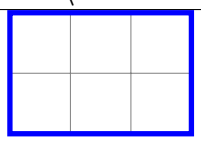
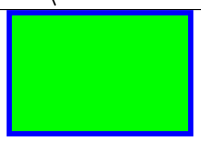
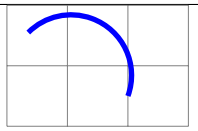
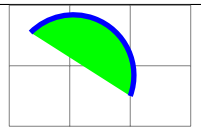
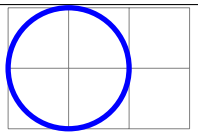
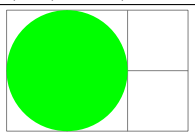
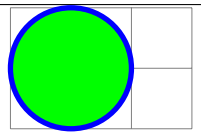
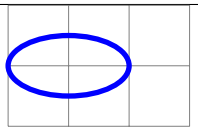
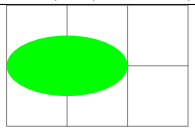
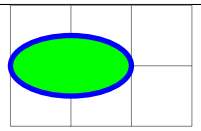
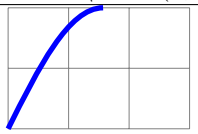
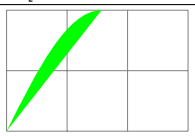
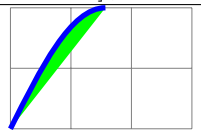
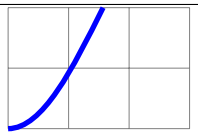
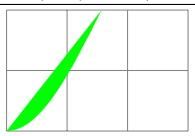
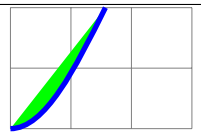
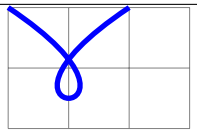
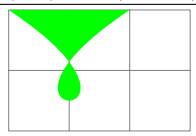
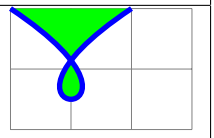
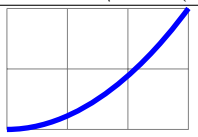
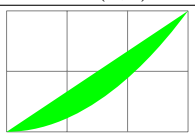
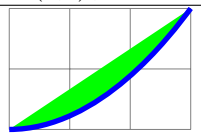
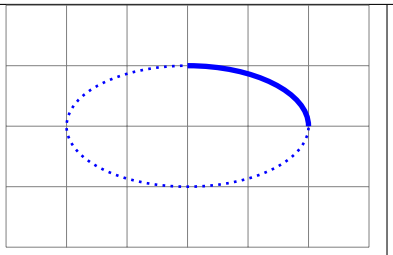
1 Les figures de base

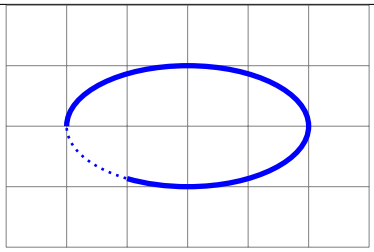


\draw (0,0) - - (2,1) ;

\draw	\fill	\filldraw
		
\draw (0,0) rectangle (3,2) ;		
		
\draw (2,1) arc (-20 :135 :1) ;		
		
\draw (1,1) circle (1) ;		
		
\draw (1,1) ellipse [x radius=1cm,y radius=.5cm] ;		
		
\draw	\fill	\filldraw
\draw (0,0) sin (1.57,2) ;		
		
\draw (0,0) cos (1.57,2) ;		
		
\draw (0,2) . . controls (3,0) and (-1,0) .. (2,2) ;		
		
\draw (0,0) parabola (3,2) ;		



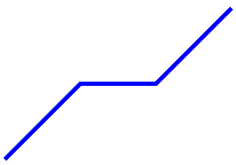
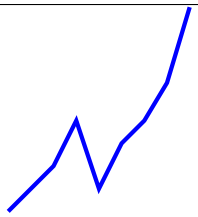
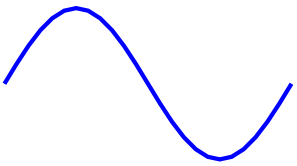
\draw (0,1) arc (90 :0 :2 and 1)



\draw (-2,0) arc (180 :-120 :2 and 1)

\draw [dotted,line width=1pt] (0,0) ellipse [x radius=2cm,y radius=1cm] ;

1.1 Dessin avec plot

une liste de coordonnées	un fichier de coordonnées	une équation mathématique
		
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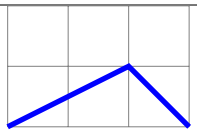
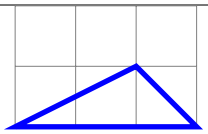
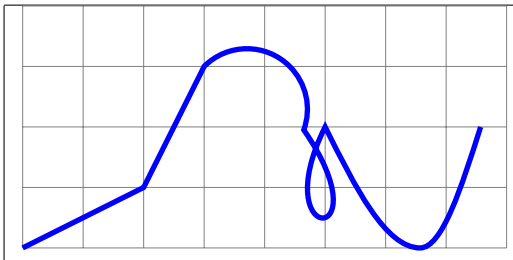
1.2 Path

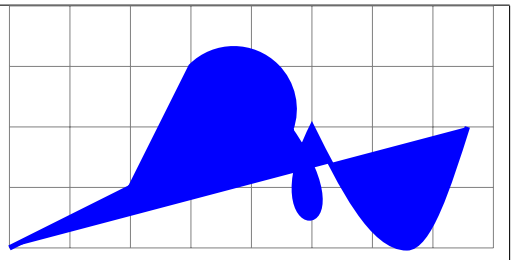


\draw (0,0) – (2,1) – (3,0) ;

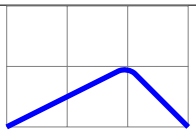


\draw (0,0) - - (2,1) - - (3,0) - - cycle ;

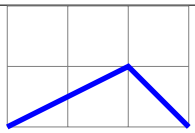




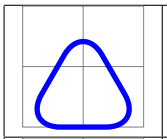
\draw (0,0) – (2,1) – (3,3) arc (135 :-20 :1) .. controls (6,0) and (4,0)
.. (5,2) sin (6.57,0) cos (7.57,2) ;



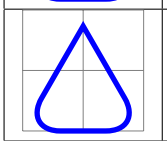
\draw [rounded corners] (0,0) – (2,1) – (3,0) ;



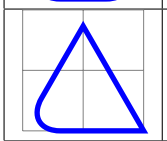
\draw [sharp corners] (0,0) - - (2,1) - - (3,0) ;



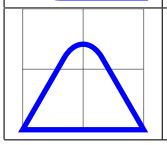
\draw [rounded corners=0.5cm] (0,0) - - (1,1.732) - - (2,0) - - cycle ;



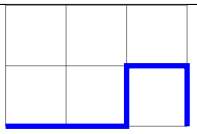
\draw (0,0) - - (1,1.732) [rounded corners=0.5cm] - - (2,0) - - cycle ;



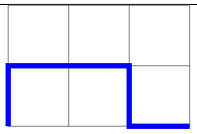
\draw (0,0) - - (1,1.732) - - (2,0)[rounded corners=0.5cm] - - cycle ;



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



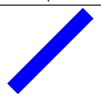
\draw (0,0) -| (2,1) -| (3,0) ;



\draw (0,0) |- (2,1) -| (3,0) ;

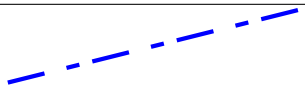
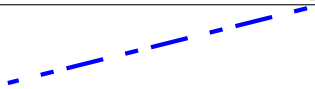
2 Les paramètres disponibles

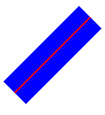
2.1 Épaisseur de ligne

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

2.2 Style de ligne

\tikz \draw[solid,ultra thick] (0,0) - - (1,1) ;			
			
[solid]	[dotted]	[densely dotted]	[loosely dotted]
			
[dashed]	[densely dashed]	[loosely dashed]	[dashdotted]
			
[densely dashdotted	[loosely dashdotted	[dashdotdotted	[densely dashdotdotted]
			
[loosely dashdotdotted]			


[dash pattern=on .5cm off .3cm on 5pt off 5 pt]

[dash pattern=on .5cm off .3cm on 5pt off 5pt,dash phase=10pt]

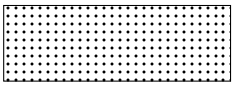
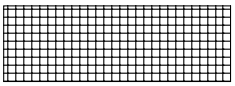
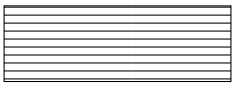
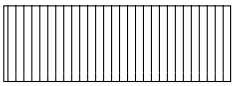
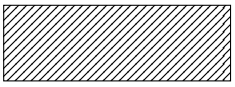
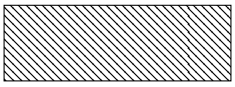
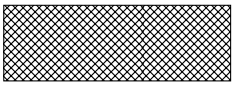
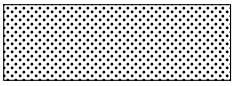
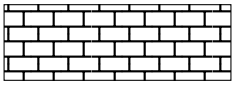
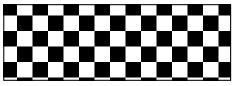
\tikz \draw[line width=.2cm,double] (0,0) - - (1,1) ;			
			
double	draw=blue,double=red	double distance=.3cm	double distance between line centers=.3cm

\Huge = \tikz \draw[baseline,blue,double equal sign distance] (0,0) - - (1,1) ;	
\Huge	\large

2.3 Remplissage

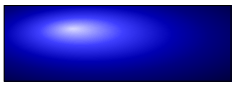
Insérer dans le préambule :

```
\usetikzlibrary{patterns}
```

\draw[pattern=dots] (0,0) - - (1,1) ;		
		
[pattern=dots]	[pattern=fivepointed stars]	[pattern=sixpointed stars]
		
[pattern=grid]	[pattern=orizontal lines]	[pattern=vertical lines]
		
[pattern=north east lines]	[pattern=north west lines]	[pattern=crosshatch]
		
[pattern=crosshatch dots]	[pattern=bricks]	[pattern=checkerboard]

2.4 Ombrage

	
shade (0,0) rectangle (3,1) ;	**shadedraw** (0,0) rectangle (3,1) ;

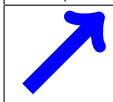
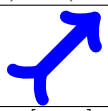
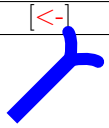
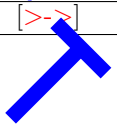
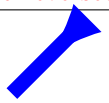
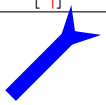
		
[shading=axis]	[shading=radial	[shading=ball]

		
[left color=red]	[right color=blue]	left color=red,right color=blue

		
[left color=red]	[right color=blue]	left color=red,shading angle=45

2.5 Les extrémités

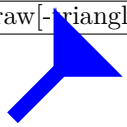
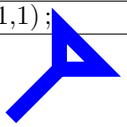
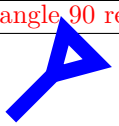
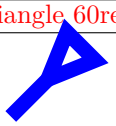
2.5.1 Chargé automatiquement avec Tikz

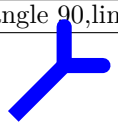
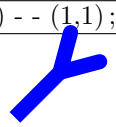
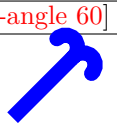
\tikz \draw[->,line width=.2cm,blue] (0,0) - - (1,1) ;			
			
[->]	[<-]	[<->]	[>->]
			
[-to]	[-to reversed]	[-o]	[-|]
			
[-latex]	[-latex reversed]	[-stealth]	[-stealth reversed]

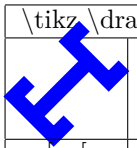
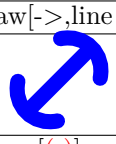
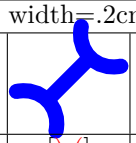
2.5.2 Options supplémentaires avec « library arrow »

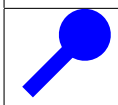
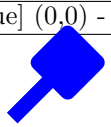
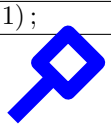
Insérer dans le préambule :

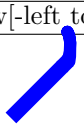
```
\usetikzlibrary{arrow}
```

\tikz \draw[-triangle 90,line width=.2cm,blue] (0,0) - - (1,1) ;			
			
[-triangle 90]	[-triangle 90 reversed]	[-open triangle 90]	[-open triangle 90 reversed]
			
[-triangle 60]	[-triangle 60 reversed]	[-open triangle 60]	[-open triangle 60reversed]
			
[-triangle 45]	[-triangle 45 reversed	[-open triangle 45]	[-open triangle 45 reversed]

\tikz \draw[-angle 90,line width=.2cm,blue] (0,0) - - (1,1) ;			
			
[-angle 90]	[-angle 90 reversed]	[-angle 60]	[-angle 60 reversed]
			
[-angle 45]	[-angle 45 reversed]	[-hooks]	[-hooks reversed]

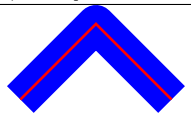
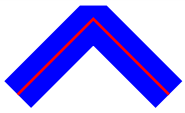
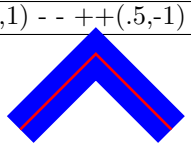
\tikz \draw[->,line width=.2cm,blue] (0,0) - - (1,1) ;			
			
[- [	[(-)]	])-([	

\tikz \draw[-*,line width=.2cm,blue] (0,0) - - (1,1) ;				
				
[-*]	[-diamond]	[-open diamond]	[-square]	[-open square]

\tikz \draw[-left to,line width=.2cm,blue] (0,0) - - (1,1) ;			
			
[-left to]	[-left to reversed]	[-right to]	[-right to reversed]
			
[-left hook	[-left hook reversed]	[-right hook]	[-right hook reversed]

\tikz \draw[-round cap,line width=.2cm,blue] (0,0) - - (1,1) ;		
		
[-round cap]	[-butt cap]	[-triangle 90 cap]
		
[-fast cap]	[-fast cap reversed]	[-triangle 90 cap reversed]

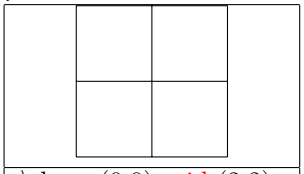
2.6 Jonction de lignes

\draw[line join=round] (0,0) - - ++(.5,1) - - ++(.5,-1) ;		
		
[line join=round	[line join=bevel]	[line join=miter]

3 Les coordonnées

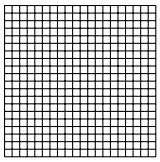
3.1 Quadrillage

:

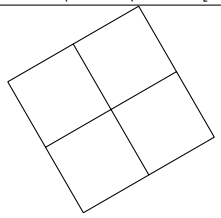


```
\draw (0,0) grid (2,2) ;
```

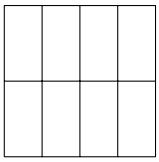
```
\tikz \draw [step=1mm] (0,0) grid (2,2) ;
```



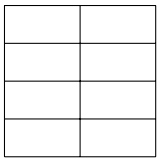
[step=1mm]



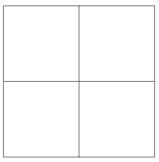
[rotate=30]



[xstep=.5]



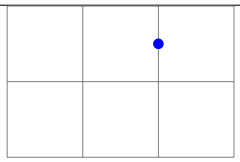
[ystep=.5]



[help lines]

3.2 Coordonnées

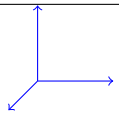
3.2.1 Système de coordonnées « canvas »



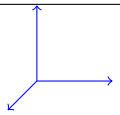
Explicite : \fill (canvas cs :x=2cm,y=1.5cm) circle (2pt) ;

Implicite : \fill (2cm,1.5cm) circle (2pt) ;

3.2.2 Système de coordonnées xyz

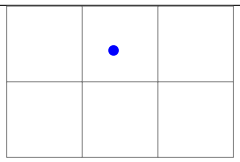


\draw (0,0) - - (xyz cs :x=1) ;
\draw (0,0) - - (xyz cs :y=1) ;
\draw (0,0) - - (xyz cs :z=1) ;



\draw (0,0) - - (1,0,0) ;
\draw (0,0) - - (0,1,0) ;
\draw (0,0) - - (0,0,1) ;

3.2.3 Système de coordonnées polaire « canvas »

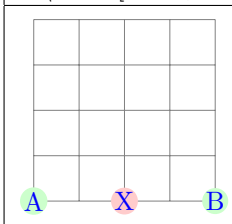


\fill (canvas polar cs :angle=45,radius=2cm) circle (2pt) ;

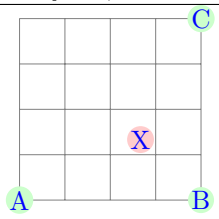
\fill (45 :2cm) circle (2pt) ;

3.2.4 Coordonnées barycentriques

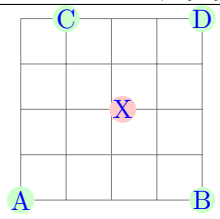
\node [circle,fill=red !20] at (barycentric cs :A=0.6,B=0.3) {X} ;



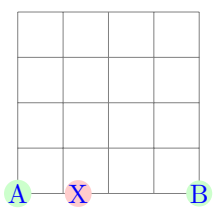
A=0.3,B=0.3



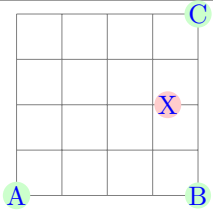
A=0.4,B=0.4 ,C=.4



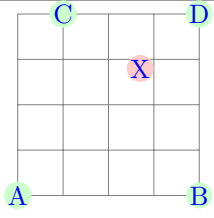
A=0.5,B=0.5,C=.5,D=.5



A=0.6,B=0.3

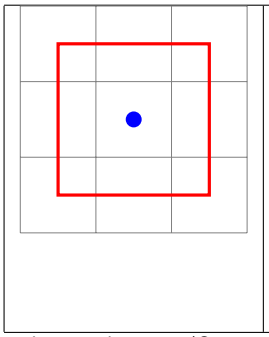


A=0.2,B=0.4 ,C=.6



A=0.2,B=0.4,C=.6,D=.8

3.3 Coordonnées nominatives : nœud

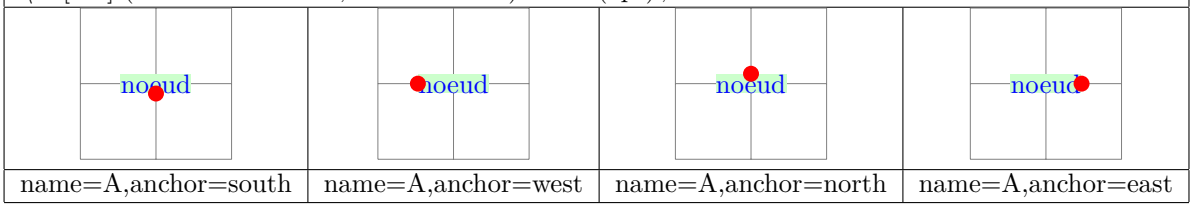


```
\coordinate (centre) at(1.5,1.5) ;
\coordinate(A) at (.5,.5) ;
\coordinate (B) at (2.5,2.5) ;

\fill (centre) circle (3pt) ;
\draw[red] (A) rectangle (B) ;
```

voir aussi page 43

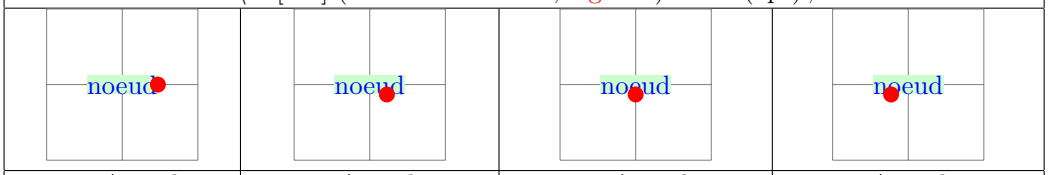
3.3.1 Coordonnées relatives à un noeud

```
\node [fill=green!20,] (A) at (1,1) {noeud} ;
\fill[red] (node cs :name=A,anchor=south) circle (3pt) ;
```



name=A,anchor=south	name=A,anchor=west	name=A,anchor=north	name=A,anchor=east

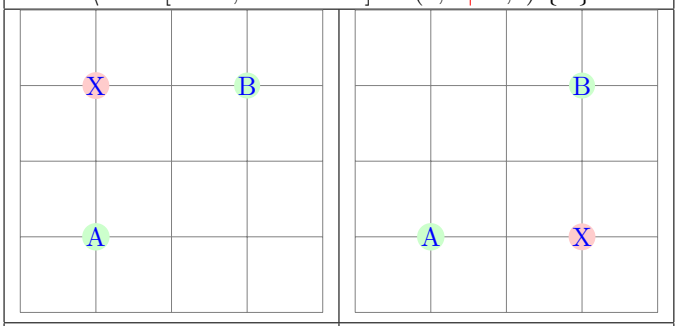
```
\fill[red] (node cs :name=A,angle=0) circle (3pt) ;
```



name=A,angle=0	name=A,angle=-30	nname=A,angle=-90	name=A,angle=-150

3.3.2 Coordonnées relatives à 2 points

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

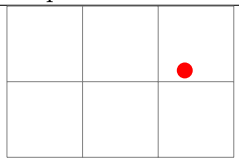


at (1,1 |- 3,3)	at (1,1 -| 3,3)

3.4 Position calculée

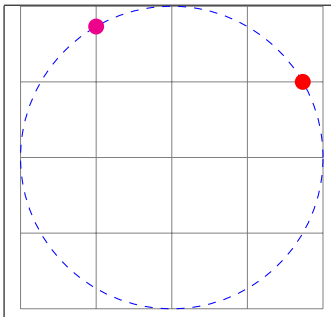
3.4.1 Position calculée avec le module « pgfmath »

Ce module est chargé automatiquement avec le module Tikz



Explicite : \fill [red] (canvas cs :x=2cm+10pt,y=1.5cm-10pt) circle (3pt) ;

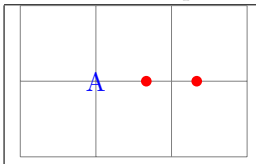
Implicite : \fill [red] (2cm+10pt,1.5cm-10pt) circle (3pt) ;



```
\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) ;
```

3.4.2 Position calculée avec « librairy calc »

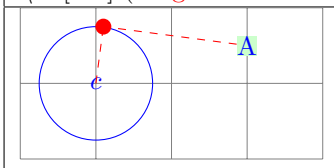
Insérer dans le préambule : \usetikzlibrary{calc}



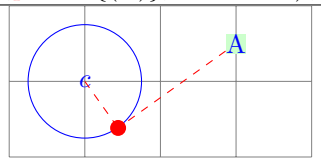

```
\node (a) at (1,1) {A} ;
\fill [red] ($(a) + 2/3*(1cm,0)$) circle (2pt) ;
\fill [red] ($(a) + 4/3*(1cm,0)$) circle (2pt) ;
```

3.4.3 Tangentes avec « librairy calc »

```
\node[fill=green !20] (a) at (3,1.5) {A} ;
\fill[red] (tangent cs :node=c,point={(A)},solution=1) ;
```



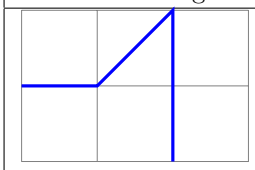
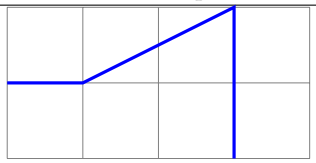
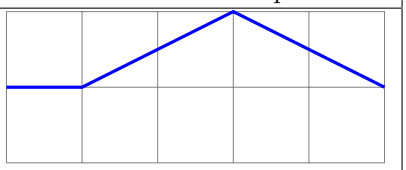
solution=1



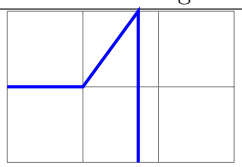
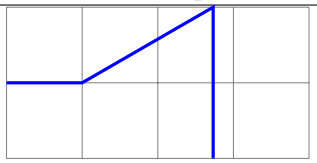
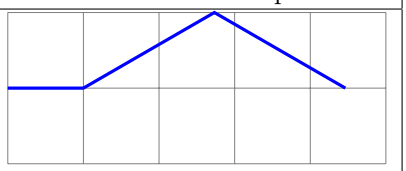
solution=2

3.5 Coordonnées relatives

3.5.1 Cartésienne

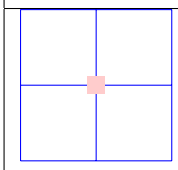
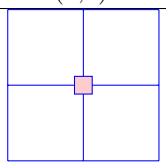
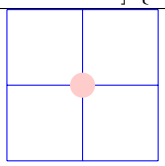
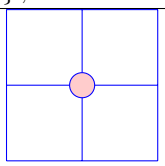
relative à l'origine	relative à une position	relative à la dernière position
		
(0,0) - - (1,0) - - (2,1) - - (2,-1)	(0,0) - - (1,0) - - +(2,1) - - +(2,-1)	(0,0) - - (1,0) - - ++(2,1) - - ++(2,-1)

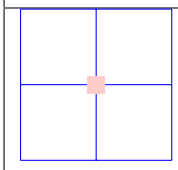
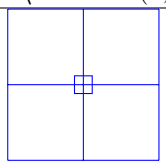
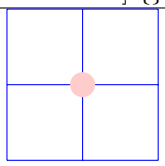
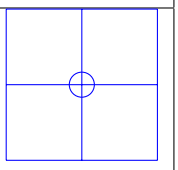
3.5.2 Polaire

relative à l'origine	relative à une position	relative à la dernière position
		
(0 :0) - - (0 :1) - - (30 :2) - - (-30 :2)	(0 :0) - - (0 :1) - - +(30 :2) - - +(-30 :2)	(0 :0)- - (0 :1) - - ++(30 :2) - - ++(-30 :2)

4 Les nœuds

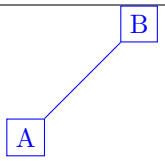
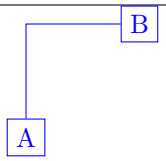
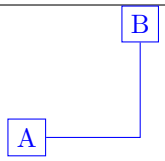
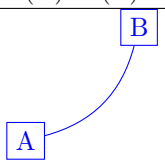
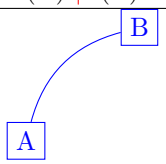
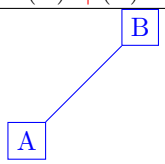
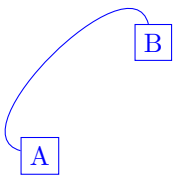
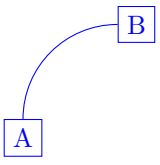
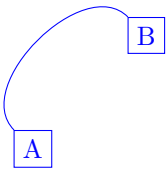
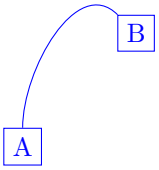
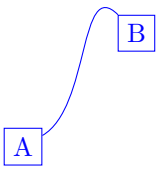
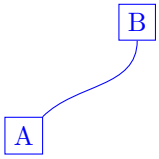
4.1 Définition des nœuds

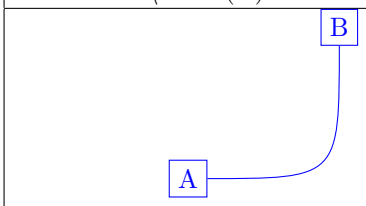
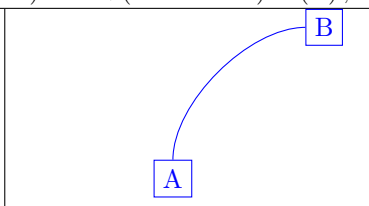
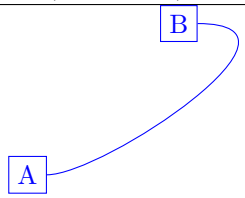
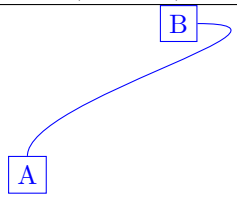
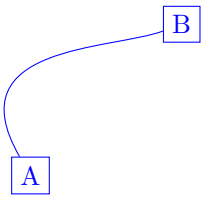
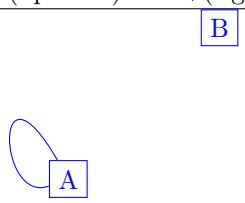
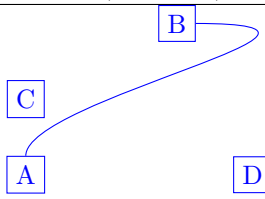
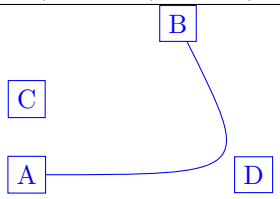
\draw (1,1) node[fill=red !20] {texte} ;			
			
Par défaut	node[draw]	node[circle]	node[circle,draw]

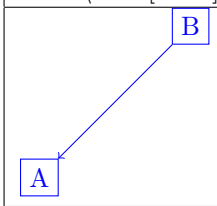
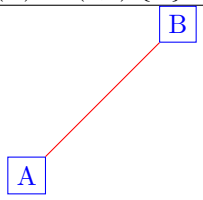
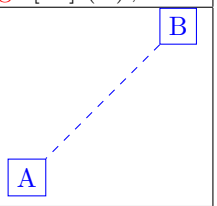
\node at (1,1) [fill=red !20] {} ;			
			
[fill=red !20]	[draw]	[circle,fill=red !20]	[circle,draw]

Autres types de nœuds voir page 29

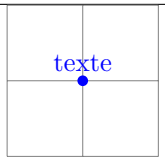
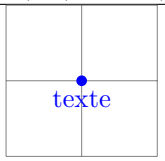
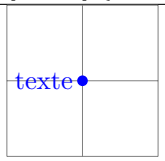
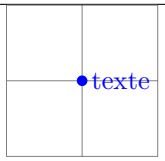
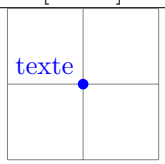
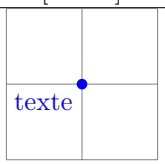
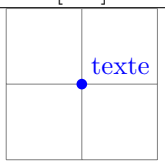
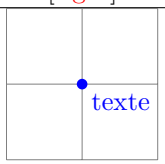
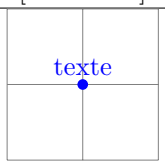
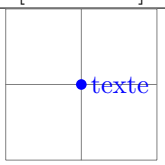
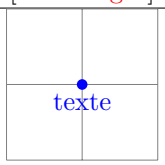
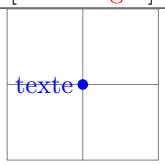
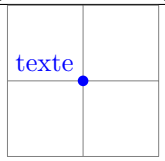
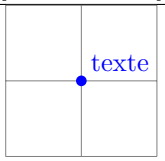
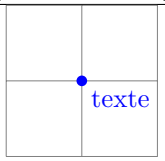
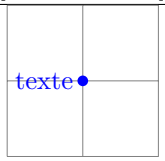
4.2 Liaisons

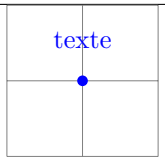
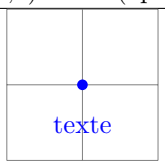
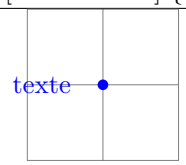
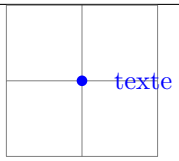
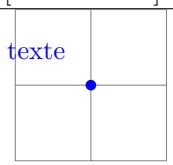
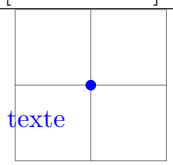
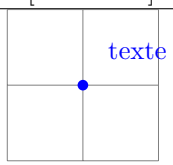
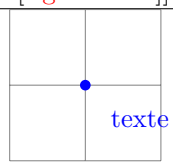
		
(A)- - (B)	(A) |- (B)	(A) -| (B)
		
(A) to [bend right] (B)	(A) to [bend left] (B)	(A) to[bend left=0] (B)
		
(A) to[bend left=120] (B)	(A) to[bend left=45] (B)	(A) to[bend left=90] (B)
		
(A) to[out=90] (B)	(A) to[out=30] (B)	(A) to[in=-90] (B)

\draw (A) .. controls +(right :2cm) and +(down :2cm) .. (B);	
	
controls +(right :2cm) and +(down :2cm)	controls +(up :1cm) and +(left :1cm)
	
controls +(right :1cm) and +(right :2cm)	controls +(up :1cm) and +(right :2cm)
	
controls +(120 :2cm) and +(200 :1cm)	controls +(120 :2cm) and +(200 :1cm)
	
controls +(C) and +(D)	controls +(D)

\node[draw] (B) at (2,2) {B} edge [->] (A);		
		
[->]	[red]	[dashed]

4.3 Étiquettes sur les nœuds

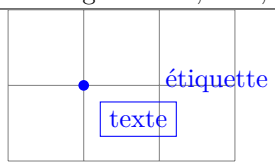
\fill(0,0) circle (2pt) node[above] {texte} ;			
			
[above]	[below]	[left]	[right]
			
[above left]	[below left]	[above right]	[below right]
			
[anchor=south]	[anchor=west]	[anchor=north]	[anchor=east]
			
[anchor=south east]	[anchor=south west]	[anchor=north west]	[anchor=north east]

\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]]

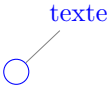
\shorthandoff{ :} [1]
\node [draw,label=right :texte] {}
\shorthandon{ :}

				
label=right	label=left	label=above	label=below	label=45

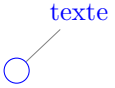
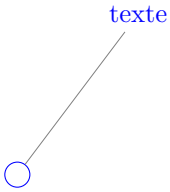
\fill(0,0) circle (2pt) node[below right=.3cm,draw,label=45 :étiquette] {texte} ;



\shorthandoff{:} \node[circle,draw,blue,pin=texte] {} ; \shorthandon{:} [1]

		
[circle,pin=texte]	[circle,pin=60:texte]	[circle,pin=right:texte]

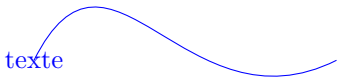
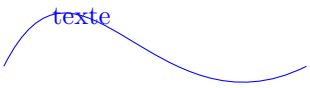
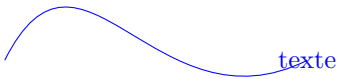
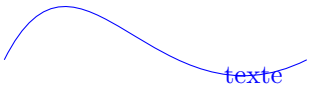
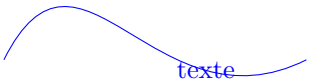
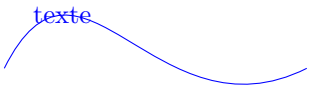
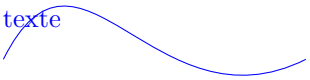
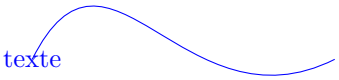
\tikz[pin position=60] \node [circle,pin=texte] {} ;

		
[pin position=60]	[pin distance=0 cm]	[pin distance=2 cm]
Par défaut : above	Par défaut : 3 ex	

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

4.4 Nœuds sur un chemin

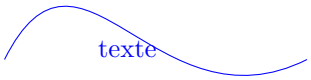
\draw(0,0) .. controls (1,2) and (2,-1) .. (4,0) node[at end] {texte} ;

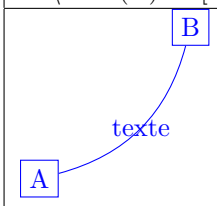
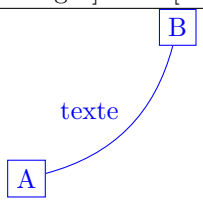
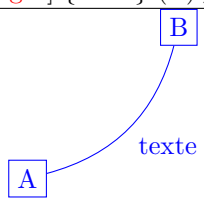
		
pos=0	pos=.33	at end (pos=1)
		
very near end (pos=0.875.)	near end (pos=0.75)	midway (pos=0.5)
		
near start (pos=0.25)	very near start (pos=0.125)	at start (pos=0)

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

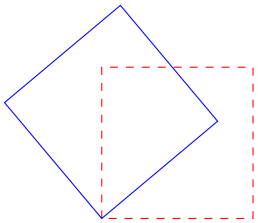
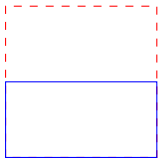
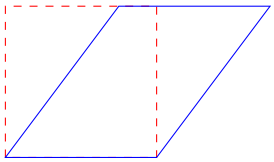
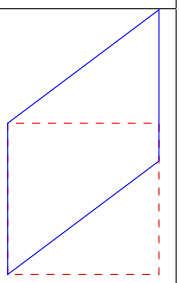
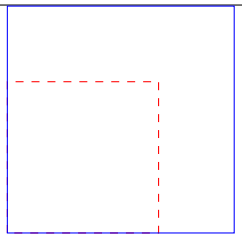
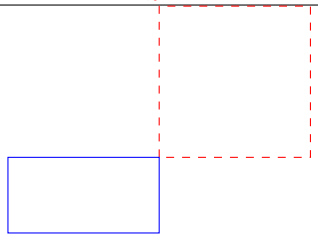
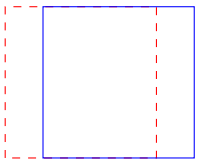
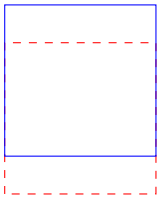
		
sloped	above	below

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

		
sloped	above	below

\draw(A) to [bend right] node [bend right] {texte} (B) ;		
		
[bend right]	[auto,bend right]	[auto,swap,bend right]

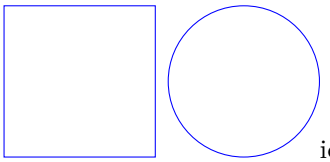
5 Constructions particulières

\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

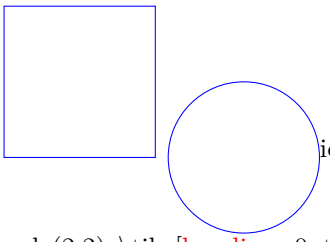
6 Placer son dessin

6.1 Dans le texte

6.1.1 Sans option de décalage

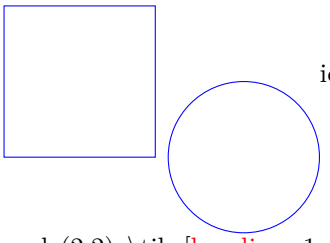
dessin directement dans le texte  ici est inclus le code suivant :
\tikz \Draw (0,0) rectangle(2,2) ;\tikz \Draw (0,0) circle (1) ;

6.1.2 Avec décalage nul

dessin directement dans le texte  ici est inclus le code suivant :

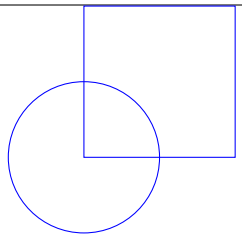
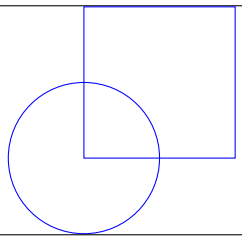
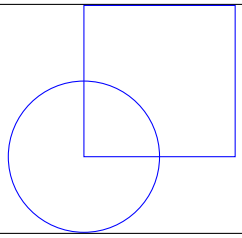
\tikz[baseline=0pt] \Draw (0,0) rectangle(2,2) ;\tikz[baseline=0pt] \Draw (0,0) circle (1) ;

6.1.3 Avec décalage

dessin directement dans le texte  ici est inclus le code suivant :

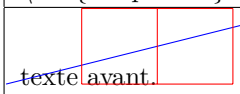
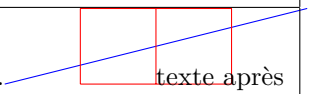
\tikz[baseline=1cm] \Draw (0,0) rectangle(2,2) ;\tikz[baseline=1cm] \Draw (0,0) circle (1) ;

6.2 Dans un environnement tikzpicture

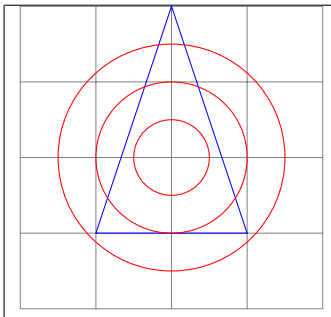
texte avant  texte après	texte avant **\begin{tikzpicture}**[blue] \draw (0,0) rectangle(2,2) ; \draw (0,0) circle (1) ; **\end{tikzpicture}** texte après
texte avant  texte après	texte avant \begin{tikzpicture}[blue,baseline=0pt] \draw (0,0) rectangle(2,2) ; \draw (0,0) circle (1) ; \end{tikzpicture} texte après
texte avant  texte après	texte avant \begin{tikzpicture}[blue,baseline=1cm] \draw (0,0) rectangle(2,2) ; \draw (0,0) circle (1) ; \end{tikzpicture} texte après

6.3 Modification du cadrage

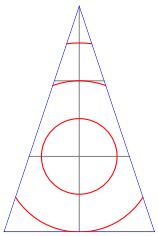
\draw [use as bounding box] (1,0) rectangle (2,1) ; \draw[blue] (-1,0) - - (3,1) ;	
texte avant  texte après	texte avant texte après
(1,0) rectangle (2,1)	(0,0) rectangle (0,0)

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

6.4 Coupure de l'image

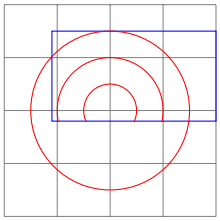


sans coupure



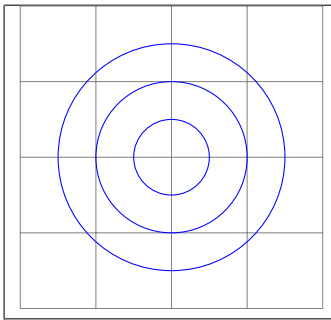
\clip (-1,-1) - -(0,2) - - (1,-1) - - cycle ;

6.5 Rognage partiel

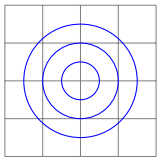


```
\tikzpicture[red,scale=.7]
\draw[help lines] (-2,-2) grid (2,2) ;
\draw[blue] (-1.1,-0.2) rectangle (2,1.5) ;
\draw (0,0) circle (1.5) ;
\clip (-1.1,-0.2) rectangle (2,1.5) ;
\draw (0,0) circle (.5) ;
\draw (0,0) circle (1) ;
\endtikzpicture
```

6.5.1 Changement d'échelle



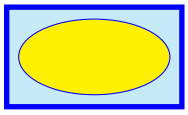
Taille normale



\tikzpicture[blue,scale=.5]

7 Arrière plan du dessin

7.1 Encadrement

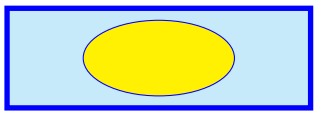
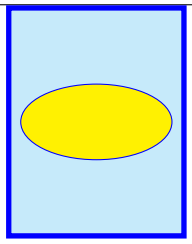
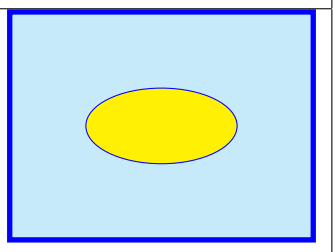
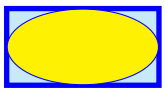
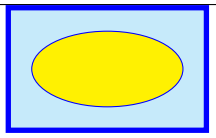
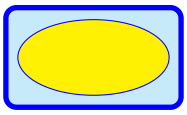


[1]

```
\begin{tikzpicture}[show background rectangle]
\filldraw[fill=yellow] (0,0) ellipse (1 and .5 ) ;
\end{tikzpicture}

Autre syntaxe :
\begin{tikzpicture}[framed]
```

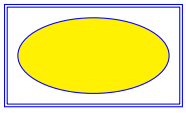
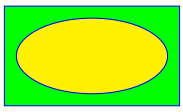
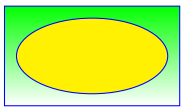
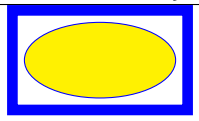
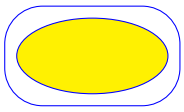
7.1.1 Options

\begin{tikzpicture}[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	Par défaut : inner frame ysep=1ex	
		
tight background	loose background	rounded corners
(inner frame sep = 0pt)	(inner frame sep = 2ex)	

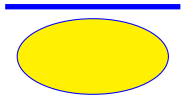
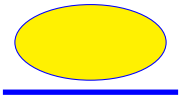
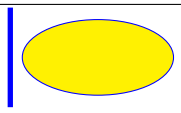
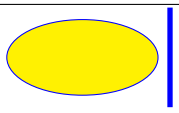
7.1.2 Style

\begin{tikzpicture}[background rectangle/.style={double,draw=blue},framed]

				
double	fill=green	top color=green	line width=4pt	rounded corners=0.5cm

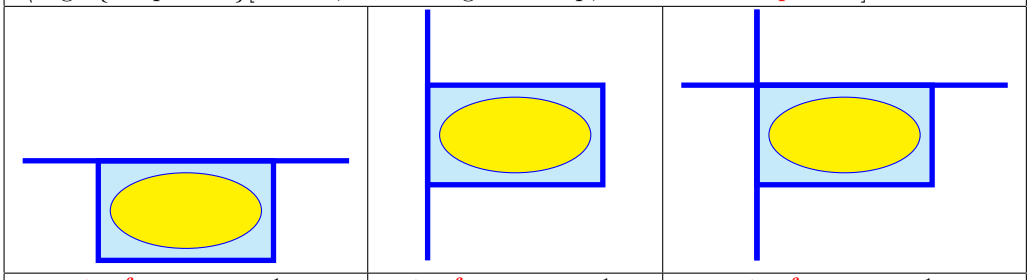
7.2 Encadrement partiel

\begin{tikzpicture}[show background top]

			
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}}

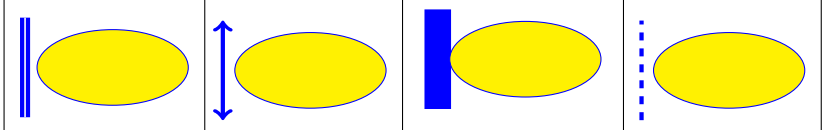
\begin{tikzpicture}[framed,show background top,outer frame xsep=1cm]



outer frame xsep=1cm | outer frame ysep=1cm | outer frame sep=1cm

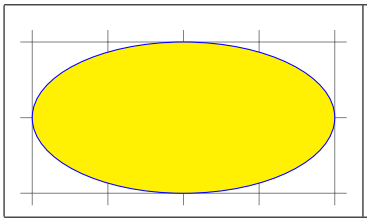
7.2.1 Style

\begin{tikzpicture}[show background left,
[background left/.style={double,ultra thick,draw=blue}]



double | <-> | line width=10pt | dashed

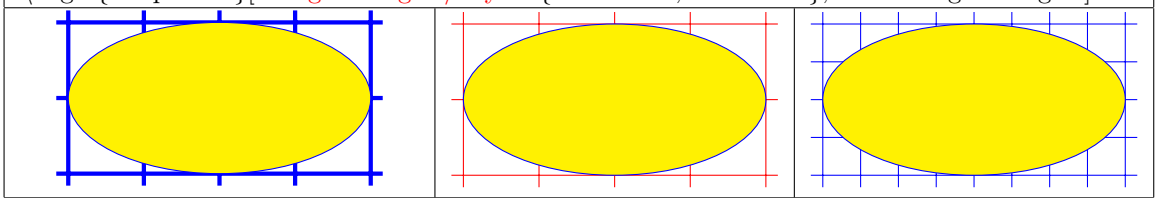
7.3 Quadrillage



```
\begin{tikzpicture}[show background grid]
\filldraw[fill=yellow] (0,0) ellipse (2 and 1);
\end{tikzpicture}

Autre syntaxe :
\begin{tikzpicture}[gridded]
```

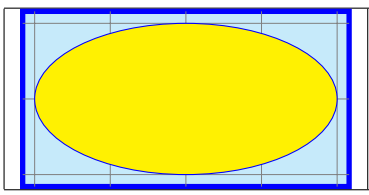
7.3.1 Style

\begin{tikzpicture}[background grid/.style={ultra thick,draw=blue},show background grid]



ultra thick ,draw=blue,draw=blue | draw=red | step=.5cm,draw=blue

7.4 Encadrement et quadrillage



```
\begin{tikzpicture}[framed , gridded ]
\filldraw[fill=yellow] (0,0) ellipse (2 and 1);
\end{tikzpicture}
```

8 Créer ses commandes

Atention : 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 ma boite 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 boite
 ,text width=.5\linewidth]     % largeur : la moitié de la ligne
 #1} ; \end{center}            % #1 correspond à l'argument
 }
```

Utilisation : \maboite{contenu}

contenu

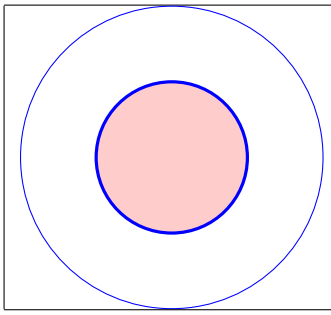
Exemple : commande sans variable :
Création

```
\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 

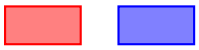
9 Créer ses styles

9.1 Style sans variable



```
\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}
```

9.2 Style à variable



```
\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}
```

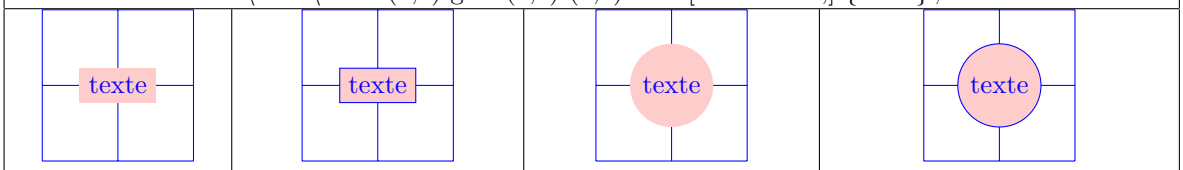
valeur par défaut

```
\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}
```

10 Mettre du texte en valeur

10.1 Dans un nœud de Tikz

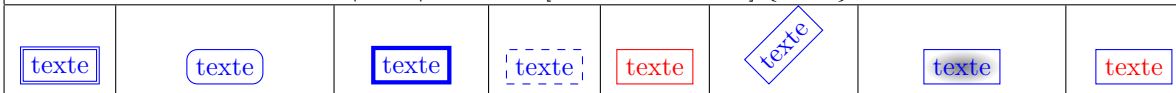
\tikz \draw (0,0) grid (2,2) (1,1) node[fill=red !20,] {texte} ;



node[fill=red !20]	node[fill=red !20,draw]	node[fill=red !20,circle]	node[fill=red !20,circle,draw]

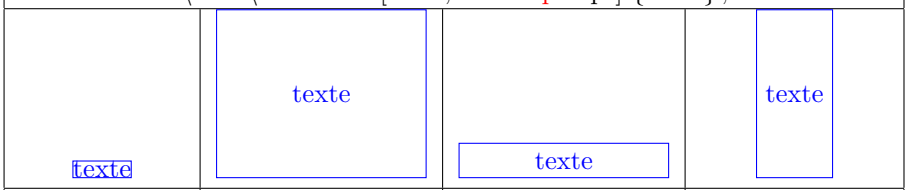
10.1.1 Options

\tikz \draw node[draw,double,blue] {texte} ;



double	rounded corners	ultra thick	dashed	red	rotate=45	shading=radial	text=red

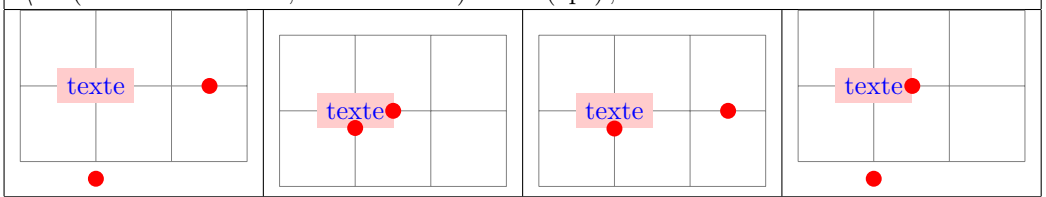
\tikz \draw node[draw,inner sep=0pt] {texte} ;



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) ;

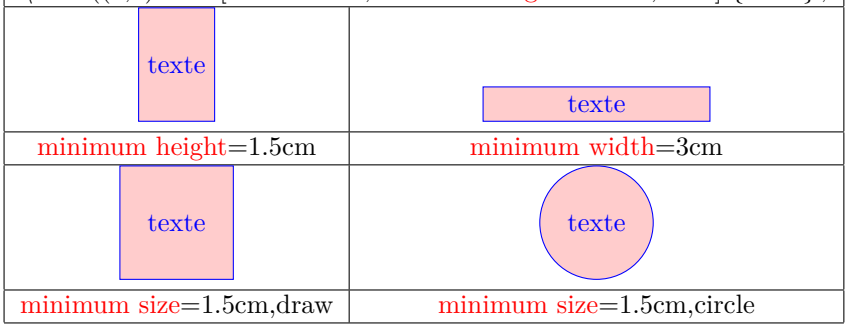


outer sep=1cm	outer sep=0pt	outer xsep=1cm	outer ysep=1cm

Par défaut : 0.5\pgflinewidth

10.1.2 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

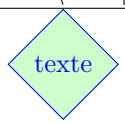
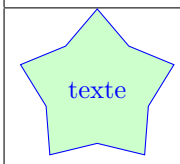
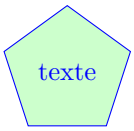
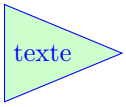
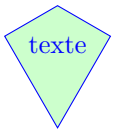
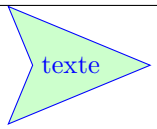
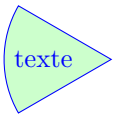
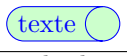
10.2 Dans un nœud à formes géométriques

Insérer dans le préambule :

```
\usetikzlibrary{shapes.geometric}
```

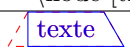
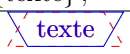
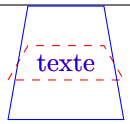
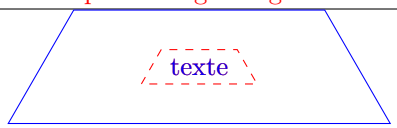
10.2.1 Formes disponibles

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

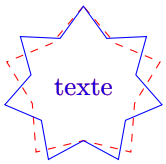
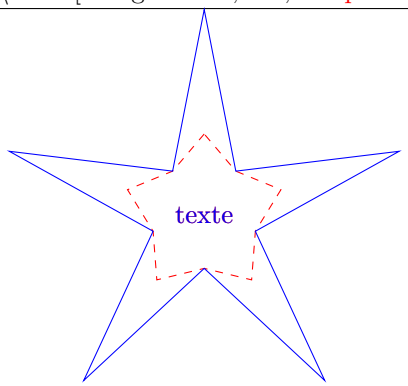
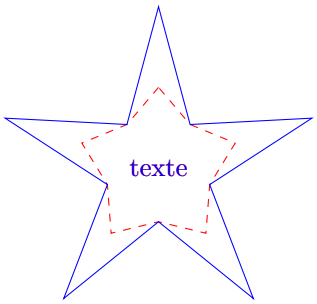
			
diamond	ellipse	trapezium	semicircle
			
star	regular polygon	isosceles triangle	kite
			
dart	circular sector	cylinder	

10.2.2 Options

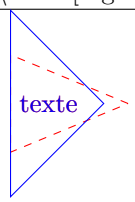
\node [trapezium,draw,trapezium left angle=90,draw,blue] {texte} ;

		
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

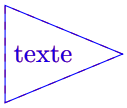
\tikz \node [fill=green !20,star,star points=6,draw] {texte} ;

		
star points=7 par défaut : 5	star point height = 2cm Par défaut.5cm	star point ratio = 3 Par défaut1.5

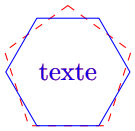
\node [isosceles triangle,isosceles triangle apex angle=90,draw,blue] {texte};
\node [regular polygon, regular polygon sides=6,draw,blue] {texte};



isosceles triangle apex angle=90

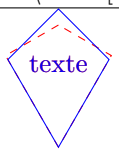


isosceles triangle stretches



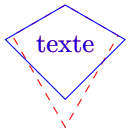
regular polygon sides=6

\node [kite,kite upper vertex angle=90,draw,blue] {texte};



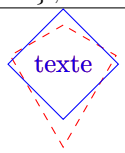
kite upper vertex angle=90

initially 120



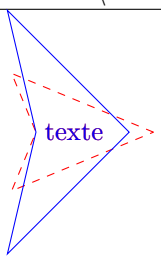
kite lower vertex angle=90

initially 60



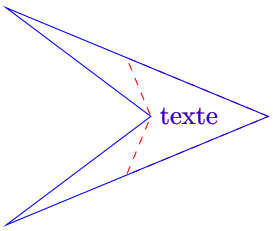
kite vertex angles=90

\node [dart,dart tip angle=90,draw,blue] {texte};



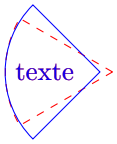
dart tip angle=90

initially 45



dart tail angle=90

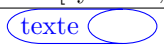
initially 135



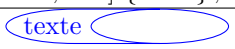
circular sector angle=90

initially 60

\node [cylinder,aspect=2,draw,blue] {texte};



aspect=2

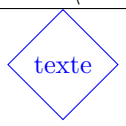


aspect=4

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

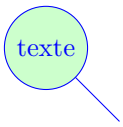
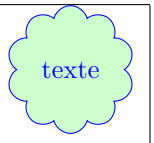
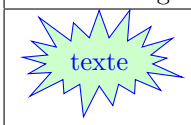
shape aspect=3

shape aspect=4

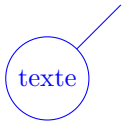
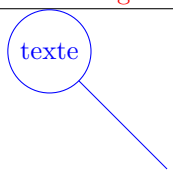
10.3 Dans un nœud en forme de symboles

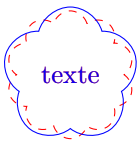
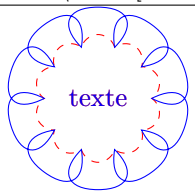
```
\usetikzlibrary{shapes.symbols}
```

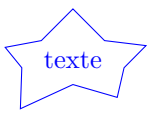
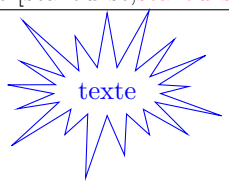
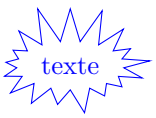
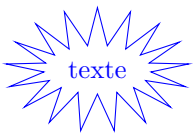
10.3.1 Formes disponibles

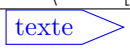
		
forbidden sign	magnifying glass	cloud
		
starburst	signal	tape

10.3.2 Options

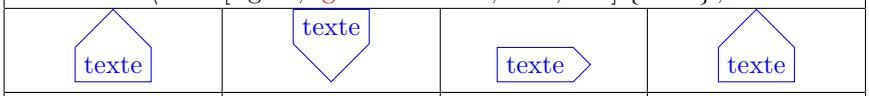
\node[magnifying glass,magnifying glass handle angle=45,draw,blue] {texte} ;		
		
magnifying glass handle angle=45	magnifying glass handle aspect=3	line width=1ex
Par défaut : -45	Par défaut : 1.5	

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

\node [starburst,starburst points=5,draw,blue] {texte} ;			
			
starburst points=5	starburst point height=1cm	random starburst=50	random starburst=0

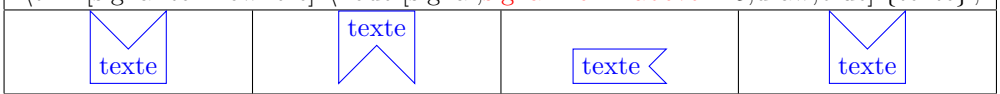
\node [signal,signal pointer angle=45,draw,blue] {texte} ;		
		
signal pointer angle=45	signal pointer angle=10	signal pointer angle=300
Par défaut : signal pointer angle= 90		

\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} ;

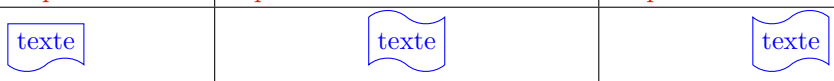


signal from=above | signal from=below | signal from=right | signal from=above

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

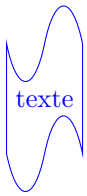
\tikz \node [tape, draw,tape bend top=out and in] {texte} ;

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} ;

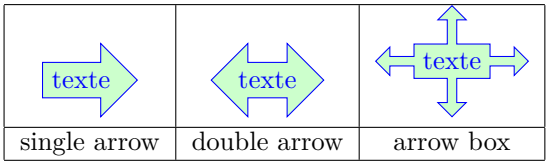


Par défaut : tape bend height = 5pt

10.4 Dans un nœud en forme de flèche

```
\usetikzlibrary{shapes.arrows}
```

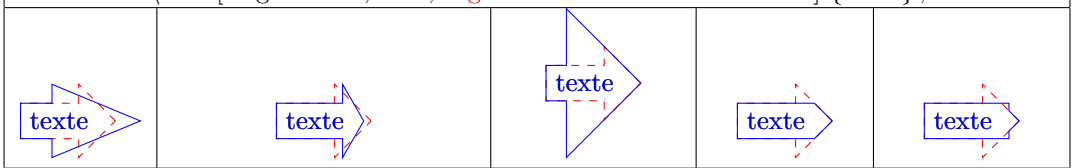
10.4.1 Formes disponibles



single arrow	double arrow	arrow box

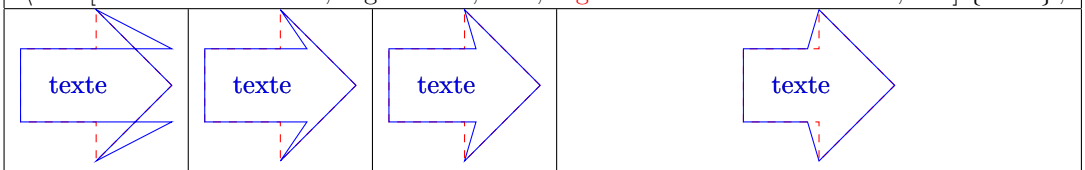
10.4.2 Options

```
\node[single arrow,draw,single arrow tip angle=45] {texte};
\node[single arrow,draw,single arrow head extend=.75cm] {texte};
```



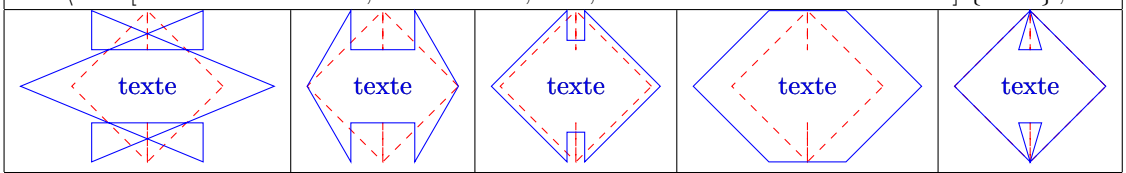
angle=45	angle=120	extend=.75cm]	extend=0cm	extend=-1mm
Par défaut : single arrow tip angle= 90		Par défaut : single arrow head extend=0.5cm		

```
\node[minimum size=2cm,single arrow,draw,single arrow head indent=1cm,blue] {texte};
```



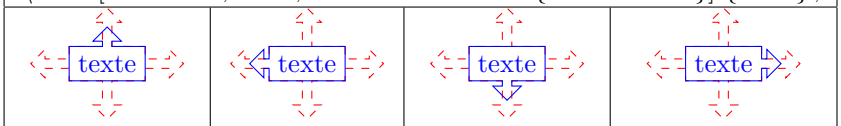
indent=1cm	indent=10pt	indent=1ex	indent=-1ex

```
\node[minimum size=2cm,double arrow,draw,double arrow tip angle=45] {texte};
\node[minimum size=2cm,double arrow,draw,double arrow head extend=1ex] {texte};
\node[minimum size=2cm,double arrow,draw,double arrow head indent=1ex] {texte};
```

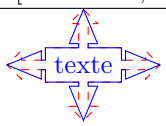
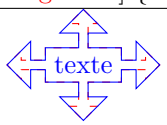
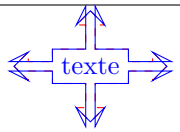
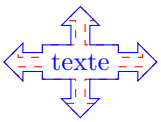


angle=45	angle=120	extend=1ex	extend=0	indent=1ex

```
\node [arrow box, draw, arrow box arrows={north :.25cm}] {texte};
```



{north :.25cm}	{west :.25cm}	{south :.25cm}	{east :.25cm}
Par défaut : 0.5 cm			

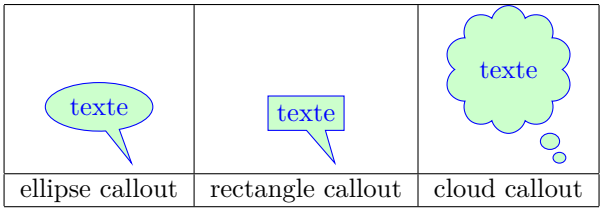
\node [arrow box, draw, arrow box tip angle=45] {texte} ;	
	
arrow box tip angle=45	arrow box head extend=.25cm
Par défaut : 90	Par défaut : 0.125cm
	
arrow box head indent=.25cm	arrow box shaft width=.25cm
Par défaut : 0cm	Par défaut : 0.125cm

10.5 Dans un nœud en forme de bulle

insérer dans le préambule :

```
\usetikzlibrary{shapes.callouts}
```

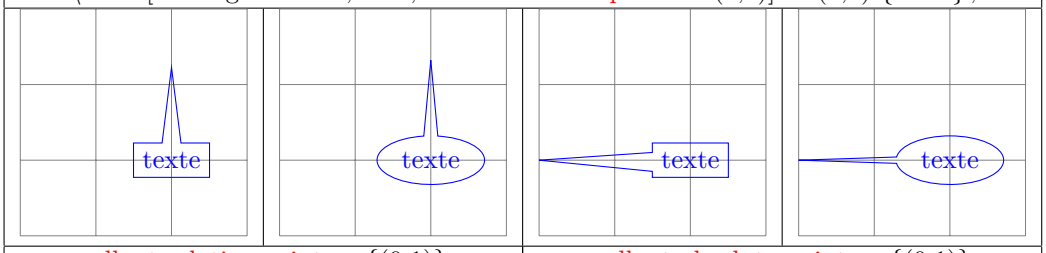
10.5.1 Formes disponibles



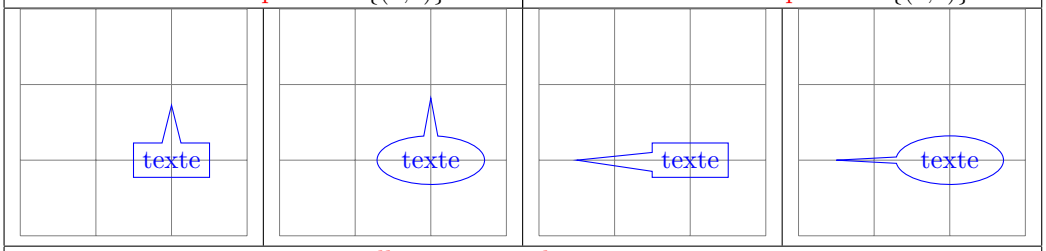
ellipse callout	rectangle callout	cloud callout

10.5.2 Options

```
\node [rectangle callout,draw,callout absolute pointer=(0,1)] at (2,1) {texte};
```

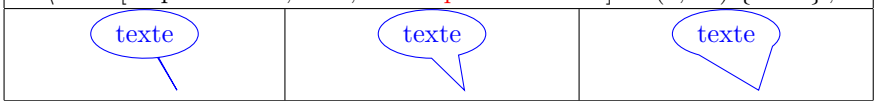


callout relative pointer={(0,1)} | callout absolute pointer={(0,1)}



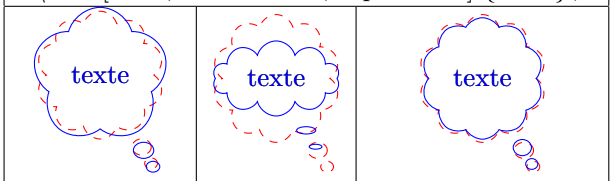
callout pointer shorten=.5cm

```
\node [ellipse callout,draw,callout pointer arc=1] at (0,1.5) {texte};
```

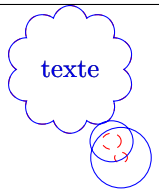


callout pointer arc=1	callout pointer arc=30	callout pointer arc=90
Par défaut : callout pointer arc=15		

```
\node[draw,cloud callout, aspect=2.5] {texte};
```



cloud puffs=5	aspect=2.5	cloud puff arc=120

\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

10.6 Dans un nœud en diverses formes diverses

insérer dans le préambule :

```
\usetikzlibrary{shapes.misc}
```

10.6.1 formes disponibles

texte	texte	texte	texte
cross out	strike out	rounded rectangle	chamfered rectangle

10.6.2 Options

Options pour « rounded rectangle » :

```
\node [draw, rounded rectangle,rounded rectangle arc length=270] {texte};
```

texte	texte	texte	texte	texte
270	180	120	90	45

```
\node [draw, rounded rectangle,rounded rectangle west arc=concave] {texte};
\node [draw, rounded rectangle,rounded rectangle left arc=concave] {texte};
```

texte	texte	texte	texte
concave	convex	none	

```
\node [draw, rounded rectangle,rounded rectangle east arc=concave] {texte};
\node [draw, rounded rectangle,rounded rectangle right arc=concave] {texte};
```

texte	texte	texte
concave	convex	none

Options pour « chamfered rectangle » :

```
\node [draw, chamfered rectangle,chamfered rectangle angle=30] {texte};
```

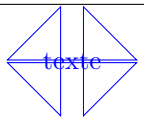
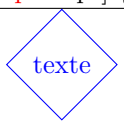
texte	texte	texte	texte
10	30	60	80
Par défaut : 45			

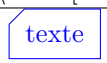
```
\node [draw, chamfered rectangle,chamfered rectangle xsep=10pt] {texte};
```

texte	texte	texte	texte	texte
xsep=0pt	xsep=5pt	xsep=10pt	xsep=-10pt	xsep=2cm
Par défaut : 0.666ex				

```
\node [draw, chamfered rectangle,chamfered rectangle ysep=10pt] {texte};
```

texte	texte	texte	texte	texte
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

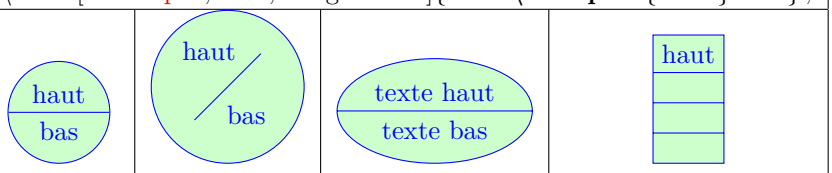
\node [draw, chamfered rectangle,chamfered rectangle corners=north west] {texte} ;		
		
north west	{north east, south east}	{north east, south west}

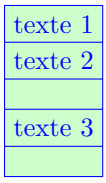
10.7 Nœuds à plusieurs parties

insérer dans le préambule :

```
\usetikzlibrary{shapes.multipart}
```

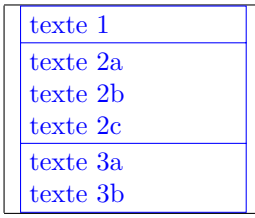
```
\node [circle split,draw,fill=green !20]{haut \nodepart{lower} bas } ;
```





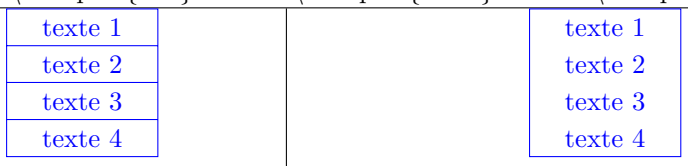

```
\node[rectangle split,rectangle split parts=5,
draw]
{texte 1
\nodepart{second} texte 2
\nodepart{four} texte 3} ;

Par défaut : rectangle split parts=4
```

```
\node [rectangle split,rectangle split parts=3,rectangle split horizontal,draw,blue]
{texte1\nodepart{two}texte2\nodepart{three}texte3} ;
```




```
\node[rectangle split,rectangle split parts=5, draw]
{texte 1
\nodepart{second} texte 2a \\texte 2b \\ texte 2c
\nodepart{three} texte 3a \\ texte 3b } ;
```

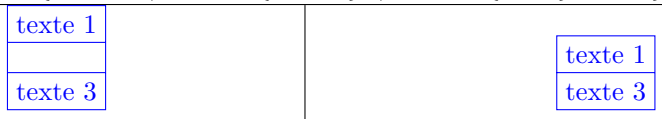
```
\node[rectangle split, draw,blue,minimum size = 2cm,rectangle split draw splits= true]
{texte 1 \nodepart{two} texte 2 \nodepart{three} texte 3 \nodepart{four} texte 4} ;
```



rectangle split draw splits= true Par défaut

rectangle split draw splits= false

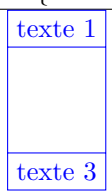
```
\node [rectangle split,rectangle split parts=3,draw,rectangle split ignore empty parts=false]
{texte 1 \nodepart{second} \nodepart{third}texte 3} ;
```

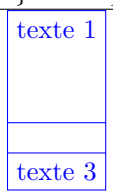


rectangle split ignore empty parts=false

rectangle split ignore empty parts=true

\node [rectangle split,rectangle split parts=3,draw,rectangle split empty part depth=1cm] {texte 1 \nodepart{second} \nodepart{third}texte 3} ;



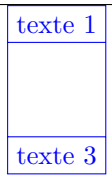


rectangle split empty part depth=1cm

Par défaut : 0ex

text depth=1cm

Par défaut : 0ex



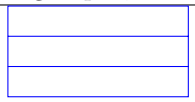
rectangle split empty part height=1cm

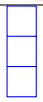
Par défaut : 1ex

text height=1cm

Par défaut : 1ex

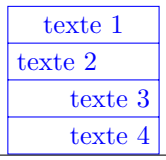
\node [rectangle split,rectangle split parts=3,draw,rectangle split empty part width=1cm] {} ;



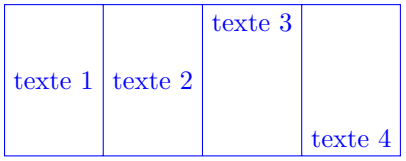


rectangle split empty part width=2cm

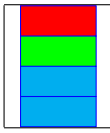
Par défaut : 1ex



\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} ;



\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} ;



\node[rectangle split, draw,blue, minimum width=1cm,
rectangle split part fill={red, green,cyan}]{} ;

10.8 Mise en forme du texte

10.8.1 Position du texte

\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

10.8.2 Couleur et fontes

Texte.	*Texte.*	*Texte.*	TEXTE.	Texte.	**Texte.**
[text= red]	[font=\itshape]	[font=\slshape]	[font=\scshape]	[font=\upshape]	[font=\bfseries]

10.8.3 Taille des fontes

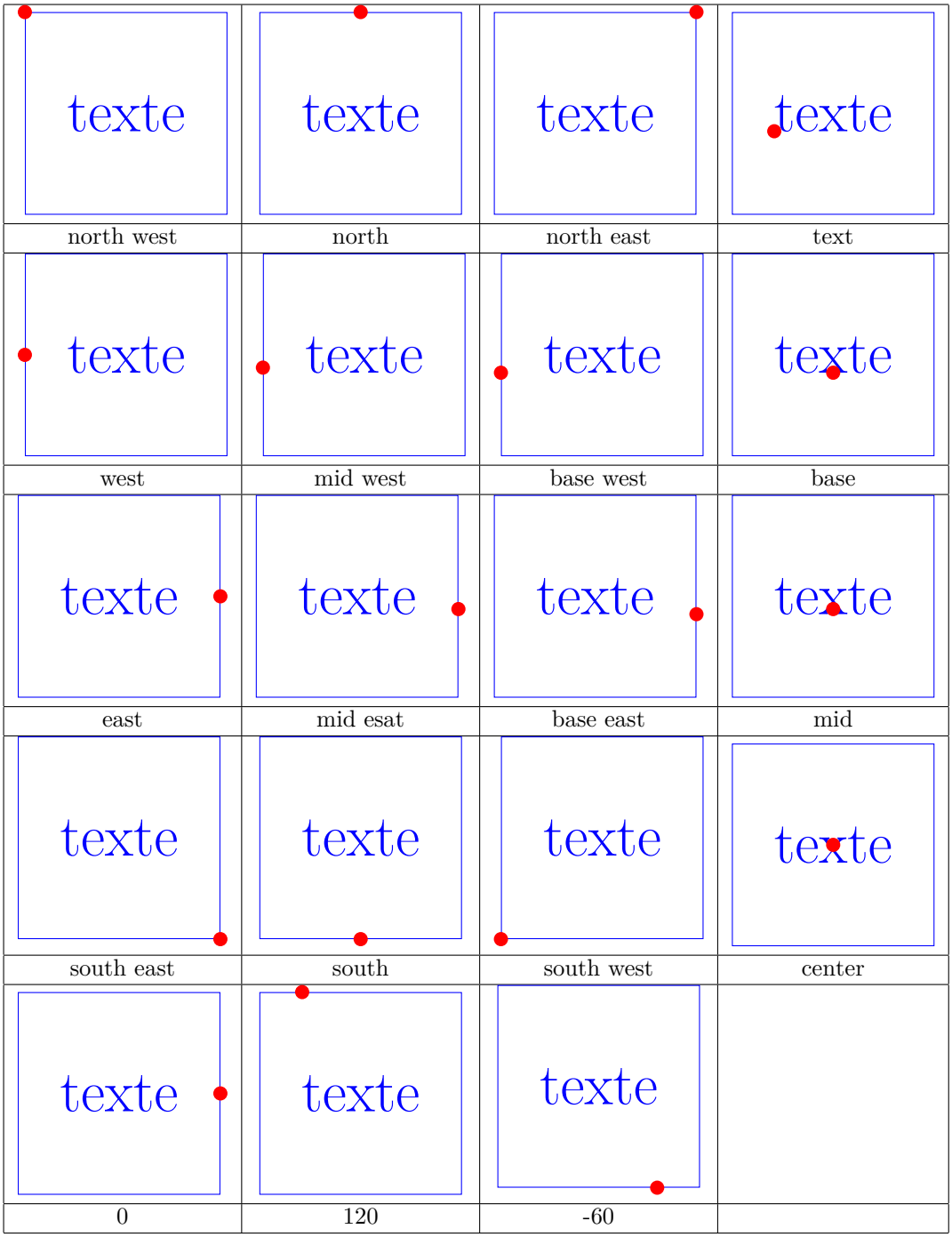
\tikz \draw (0,0) node[font=\tiny]{Texte.}

Texte.	Texte.	Texte.	Texte.	Texte.	Texte.	Texte.
\tiny	\footnotesize	\small	\large	\Large	\huge	\Huge

Texte.	Texte.
text height=1cm	text depth=1cm

10.9 Positions prédéfinies sur un nœud

10.9.1 pour l'ensemble des nœuds

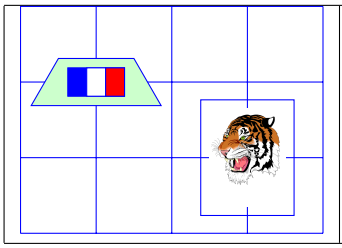


10.9.2 spécifique à un nœud

Dans une prochaine version !

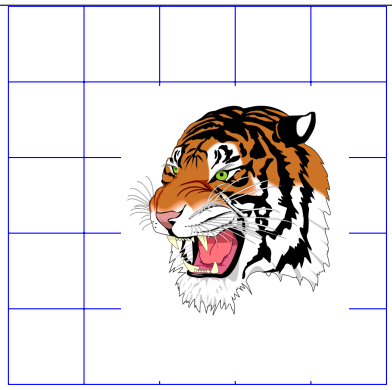
11 Insertion images dans un environnement Tikz

11.0.3 Dans un noeud



```
\begin{tikzpicture}
\draw (0,0) grid (5,3) ;
\node [fill=green !20,trapezium,draw] at (1,2) {\DFR } ; 27
\node [draw] at (3,1) {\includegraphics[width=1cm]{tiger} } ;
\end{tikzpicture}
```

11.0.4 En déclarant l'image dans pgf



```
\pgfdeclareimage[width=3cm]{ttt}{tiger}

\begin{tikzpicture}
\draw (0,0) grid (5,5) ;
\draw (3,2) node {\pgfuseimage{ttt}} ;
\end{tikzpicture}
```

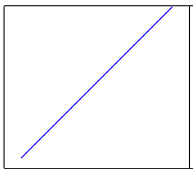
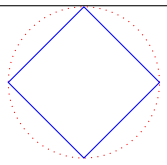
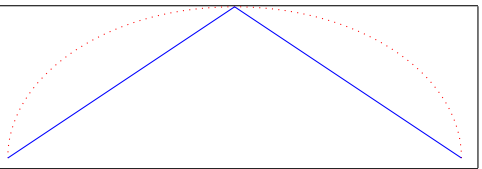
12 Décorations

12.1 Library « decorations.pathmorphing »

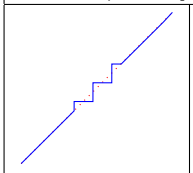
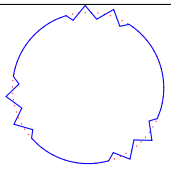
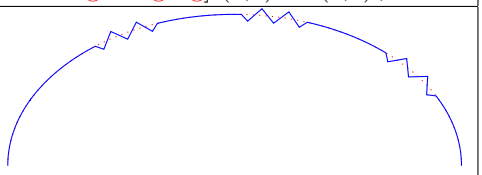
Insérer dans le préambule :

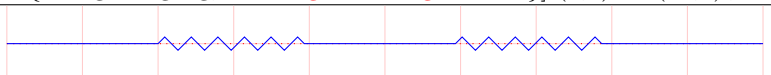
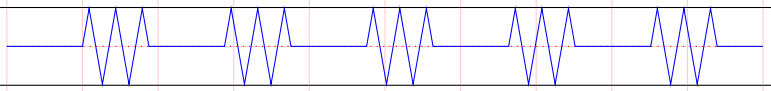
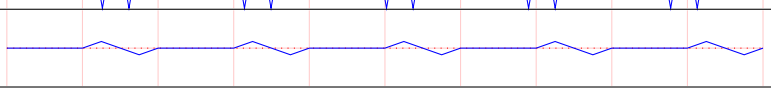
```
\usetikzlibrary{decorations.pathmorphing}
```

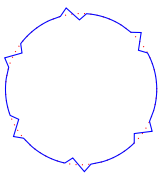
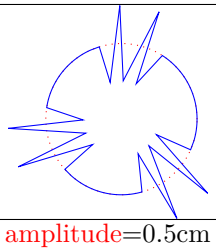
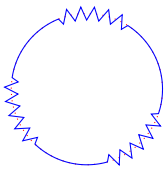
12.1.1 Décoration « lineto »

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

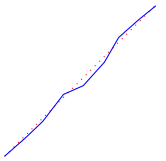
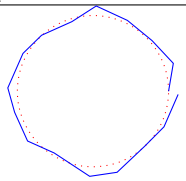
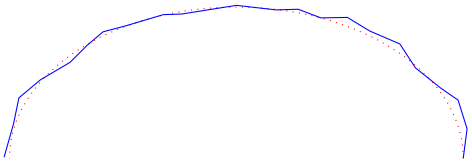
12.1.2 Décoration « straight zigzag »

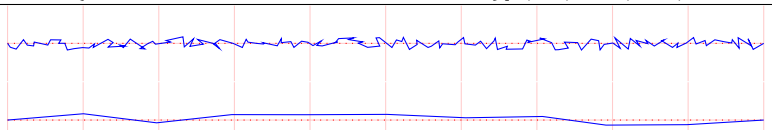
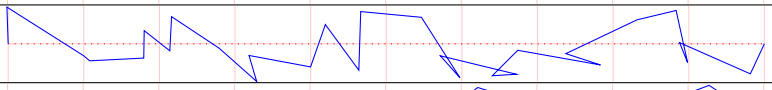
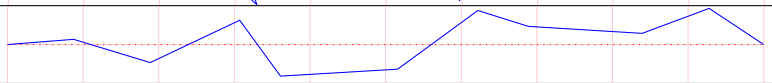
\draw[decorate,decoration=straight zigzag] (0,0) - - (2,2) ;		
		
(0,0) - - (2,2)	(1,1) circle (1)	(0,0) arc (0 :180 :3 and 2) ;

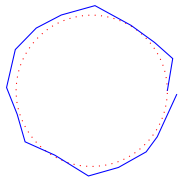
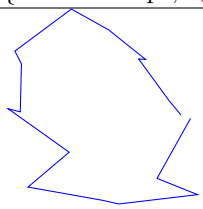
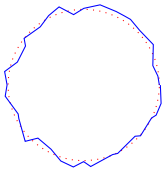
\draw[decorate,decoration={straight zigzag,meta-segment length=2cm}] (0,0) - - (10,0) ;		Par défaut
meta-segment length=2cm		1cm
amplitude=0.5cm		2.5pt
segment length=1cm		10pt

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

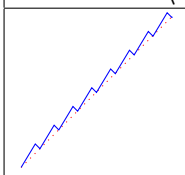
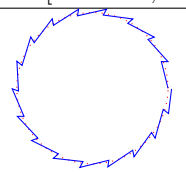
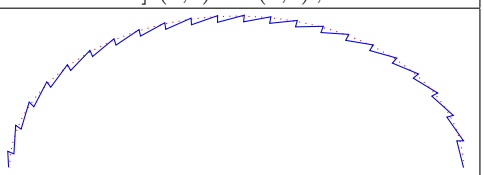
12.1.3 Décoration « random steps »

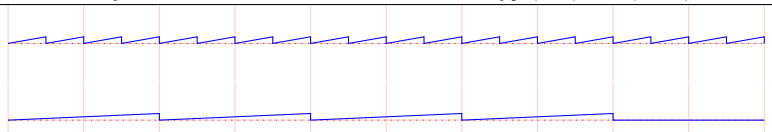
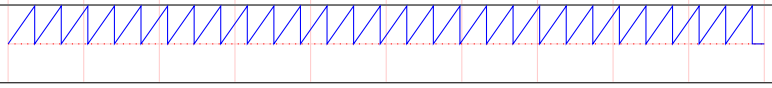
\draw[decorate,decoration=random steps] (0,0) - - (2,2) ;		
		
(0,0) – (2,2)	(1,1) circle (1)	(0,0) arc (0 :180 :3 and 2)

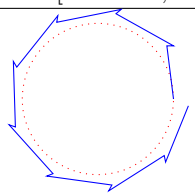
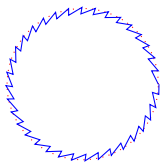
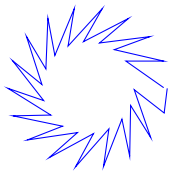
\draw[decorate,decoration={random steps,segment length=2cm}] (0,0) - - (10,0) ;		Par défaut
segment length=2pt segment length=1cm		10pt
amplitude=0.5cm		2.5pt
amplitude=0.5cm ,segment length=1cm		

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

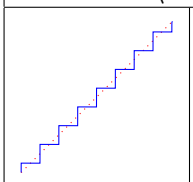
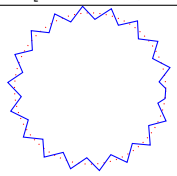
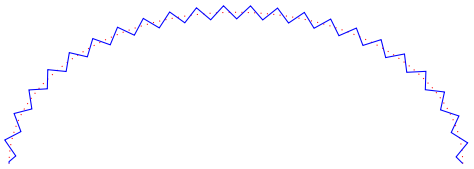
12.1.4 Décoration « saw »

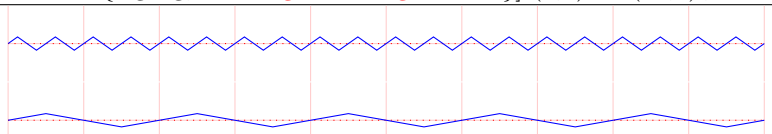
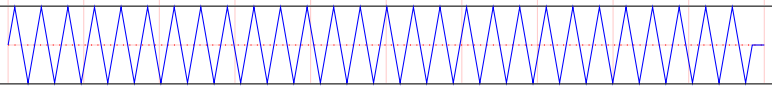
\draw[decorate,decoration=saw] (0,0) - - (2,2) ;		
		
(0,0) - - (2,2)	(1,1) circle (1)	(0,0) arc (0 :180 :3 and 2) ;

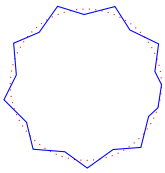
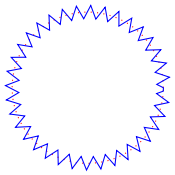
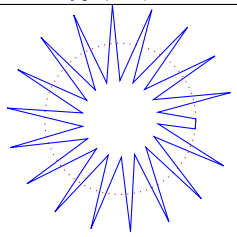
\draw[decorate,decoration={saw,meta-segment length=0.5cm}] (0,0) - - (10,0) ;		Par défaut
segment length=0.5cm segment length=2cm		10 pt
amplitude=0.5cm		2.5 pt

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

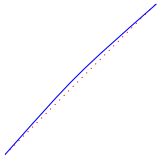
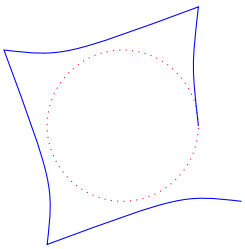
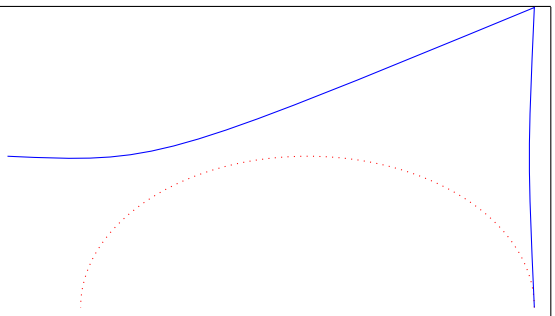
12.1.5 Décoration « zigzag »

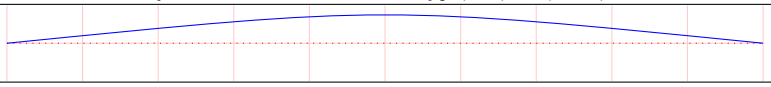
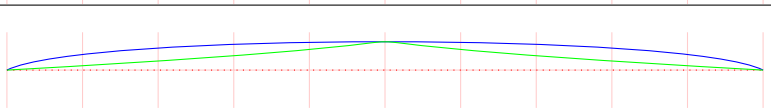
\draw[decorate,decoration=zigzag] (0,0) - - (2,2) ;		
		
(0,0) - - (2,2)	(1,1) circle (1)	(0,0) arc (0 :180 :3 and 2) ;

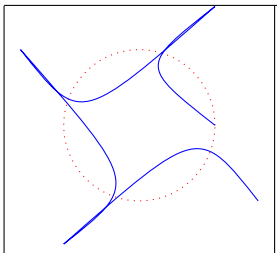
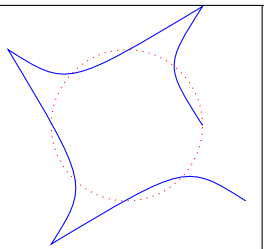
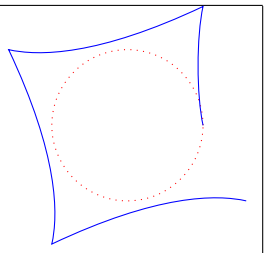
\draw[decorate,decoration={zigzag,meta-segment length=2cm}] (0,0) - - (10,0) ;		Par défaut
segment length=0.5cm		10pt
segment length=2cm		
amplitude=0.5cm		2.5 pt

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

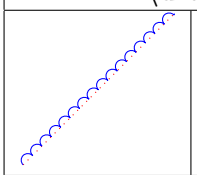
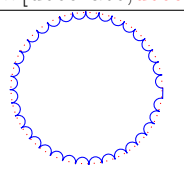
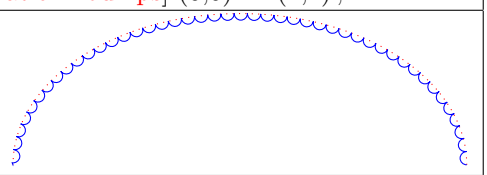
12.1.6 Décoration « bent »

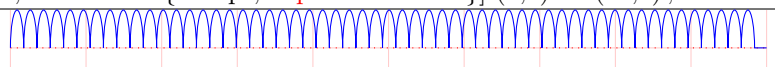
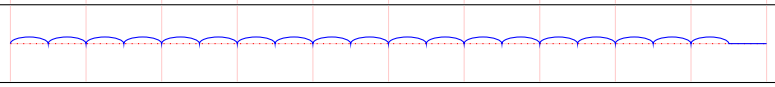
		
(0,0) - - (2,2)	(1,1) circle (1)	(0,0) arc (0 :180 :3 and 2) ;

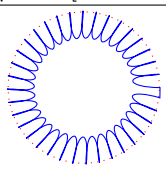
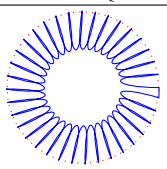
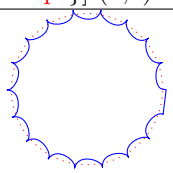
\draw[decorate,decoration={bent,amplitude=0.5cm}] (0,0) – (10,0) ;		Par défaut
amplitude=0.5cm		2.5 pt
aspect=0.1 (en bleue) aspect=0.9 (en vert) amplitude=0.5cm		0.5

		
amplitude=1cm	amplitude=0.5cm	aspect=0.25

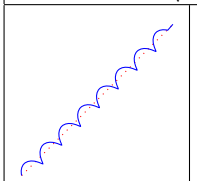
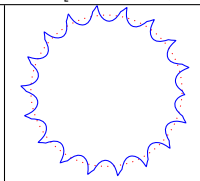
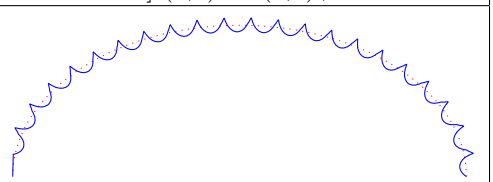
12.1.7 Décoration « bumps »

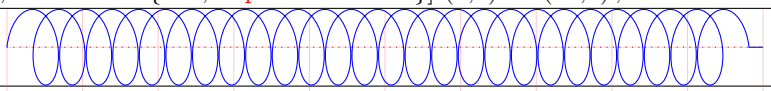
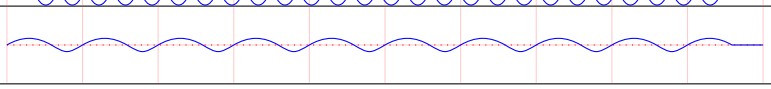
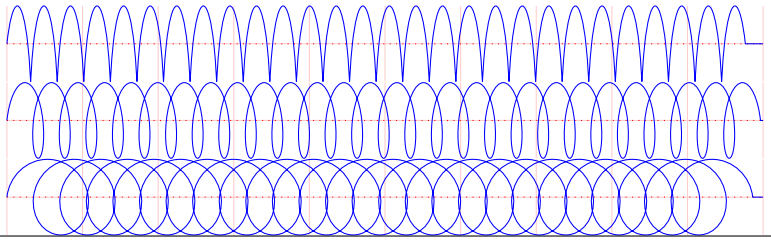
\draw[decorate,decoration=bumps] (0,0) - - (2,2) ;		
		
(0,0) - - (2,2)	(1,1) circle (1)	(0,0) arc (0 :180 :3 and 2)

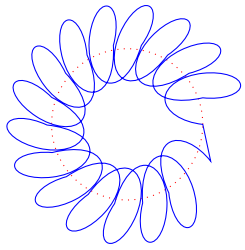
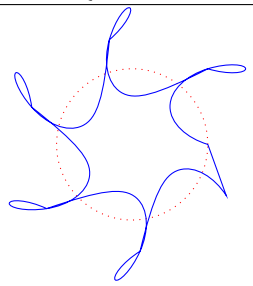
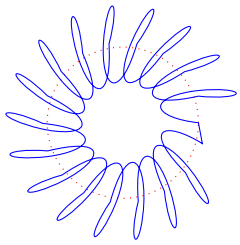
\draw[decorate,decoration={bumps,amplitude=0.5cm}] (0,0) - - (10,0) ;		Par défaut
amplitude=0.5cm		2.5 pt
segment length=1cm		10 pt

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

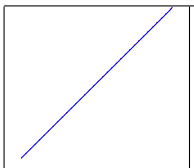
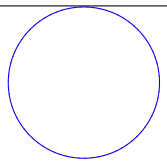
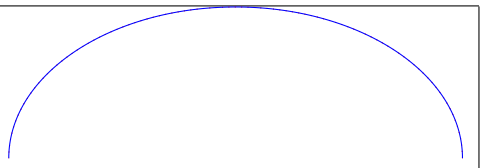
12.1.8 Décoration « coil »

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

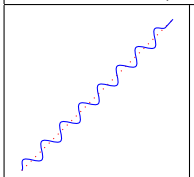
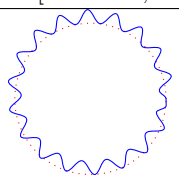
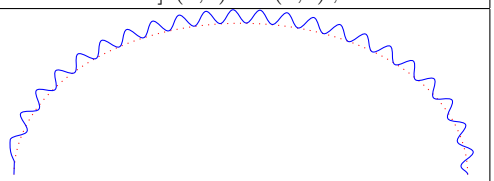
\draw[decorate,decoration={coil,amplitude=0.5cm}] (0,0) - - (10,0) ;		Par défaut
amplitude=0.5cm		2.5 pt
segment length=1cm		10 pt
aspect=0.1 (amplitude=0.5cm) aspect=0.3 aspect=0.9		0.5

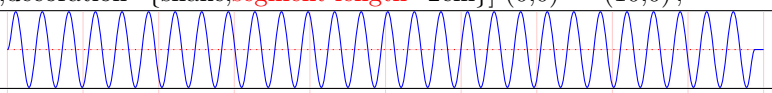
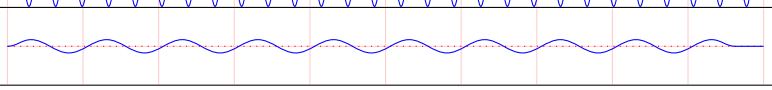
\draw[decorate,decoration= {coil,amplitude=0.5cm}] (1,1) circle (1) ;		
		
amplitude=0.5 cm	segment lenght=1cm amplitude=0.5cm	aspect=0.25 amplitude=0.5cm

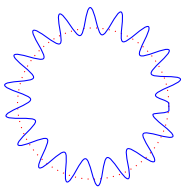
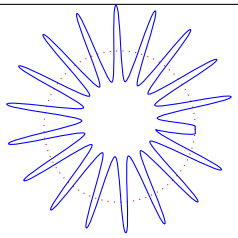
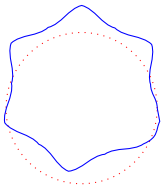
12.1.9 Décoration « curveto »

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

12.1.10 Décoration « snake »

\draw[decorate,decoration=snake] (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

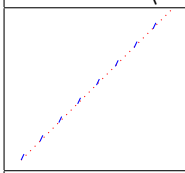
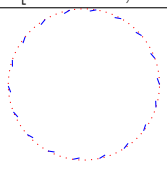
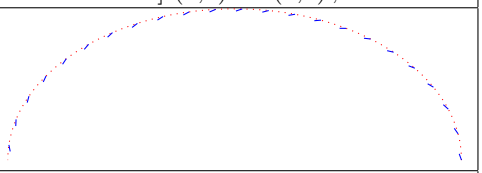
\draw[decorate,decoration= snake, amplitude=5pt] (1,1) circle (1) ;		
		
amplitude=5pt	amplitude=0.5cm	segment length=5pt

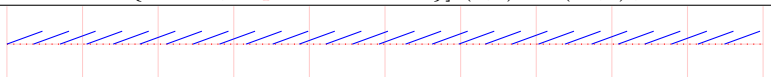
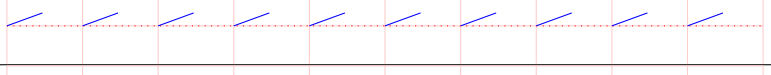
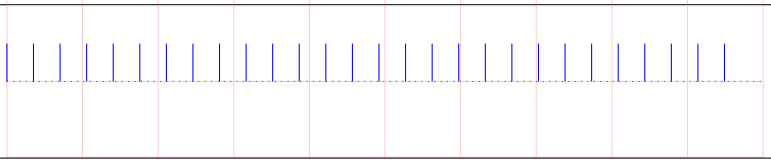
12.2 Library « decorations.pathreplacing »

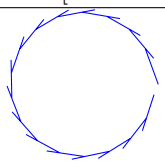
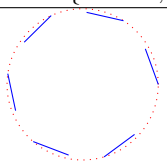
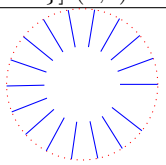
Insérer dans le préambule :

```
\usetikzlibrary{decorations.pathreplacing}
```

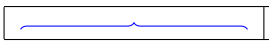
12.2.1 Décoration « border »

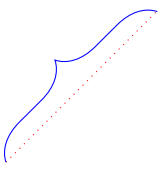
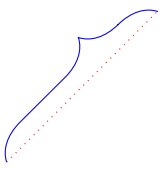
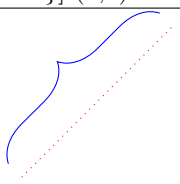
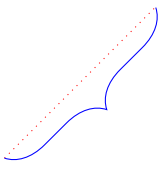
\draw[decorate,decoration=border] (0,0) - - (2,2) ;		
		
(0,0) - - (2,2)	(1,1) circle (1)	(0,0) arc (0 :180 :3 and 2)

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

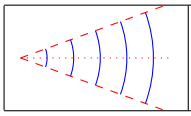
\draw[decorate,decoration= {border,amplitude=0.5cm}] (1,1) circle (1) ;		
		
amplitude=0.5cm	segment length=1cm ,amplitude=0.5cm	angle=90 ,amplitude=0.5cm

12.2.2 Décoration « brace «

	\draw [decorate,decoration=brace] (0,0) - - (3,1) ;

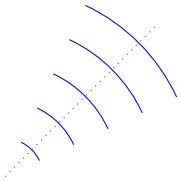
\draw[decorate,decoration= {brace,amplitude=0.5cm}] (1,1) circle (1) ; ;			
			
amplitude=0.5cm	aspect=0.65 ,amplitude = 0.5cm	raise= 0.25cm ,amplitude = 0.5cm	mirror ,amplitude = 0.5cm
Par défaut : 2.5	Par défaut : 0.5	Par défaut : 0	

12.2.3 Décoration « expanding waves »

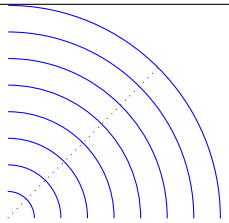


```
\draw [dashed,red](0,0) - - (20 :2) ;
\draw [dashed,red](0,0) - - (-20 :2) ;
\draw [decorate,decoration={expanding waves}](0,0) - - (2,0) ;
```

\draw[decorate,decoration= {expanding waves,segment length=0.5cm}] (1,1) circle (1) ;



segment length=0.5cm
Par défaut : 10pt



angle=45
Par défaut : 20

12.2.4 Décoration « moveto »

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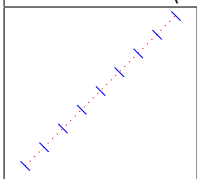
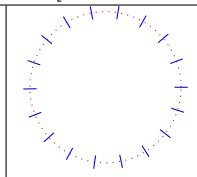
12.2.5 Décoration « ticks »

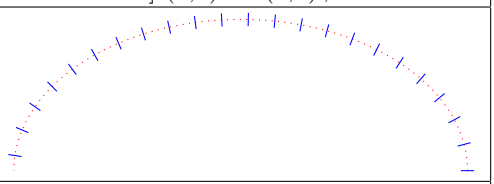
\draw[decorate,decoration=ticks] (0,0) - - (2,2) ;



(0,0) - - (2,2)

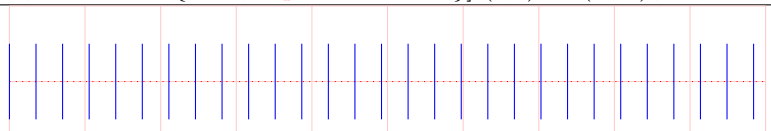
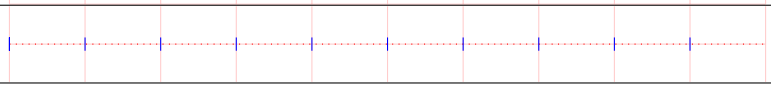


(1,1) circle (1)

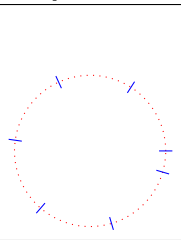


(0,0) arc (0 :180 :3 and 2)

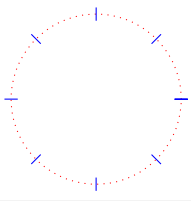
\draw[decorate,decoration={ticks,amplitude=0.5cm}] (0,0) - - (10,0) ;

		Par défaut
amplitude=0.5cm		2.5 pt
segment length=1cm		10 pt

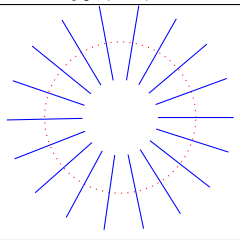
\draw[decorate,decoration= {ticks,segment length=1cm}] (1,1) circle (1) ;



segment length=1cm
(1,1) circle (1)



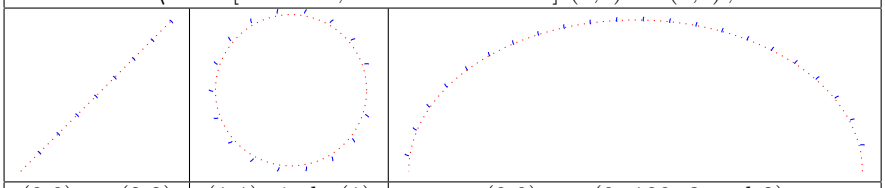
segment length=pi*8
(1,1) circle (32pt)



amplitude=0.5cm
(1,1) circle (1)

12.2.6 Décoration « waves »

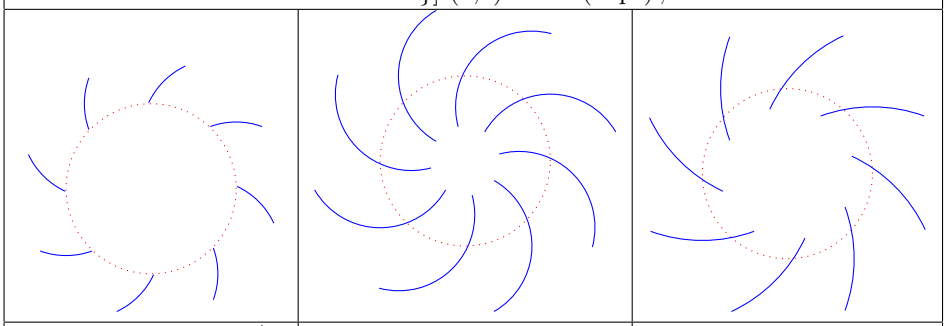
\draw[decorate,decoration=waves] (0,0) - - (2,2) ;



(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) ;

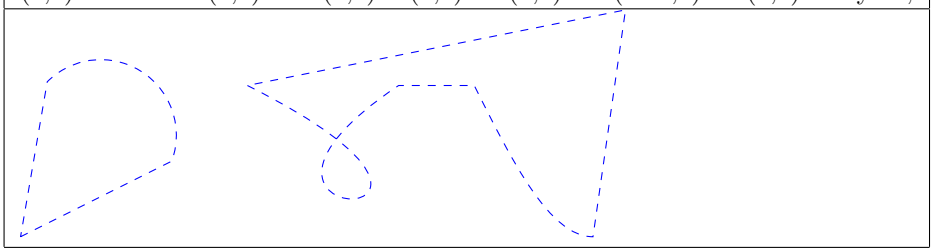


segment length = pi*8	angle=60 , segment length = pi*8	radius=2cm , segment length = pi*8

12.2.7 Décoration « show path construction »

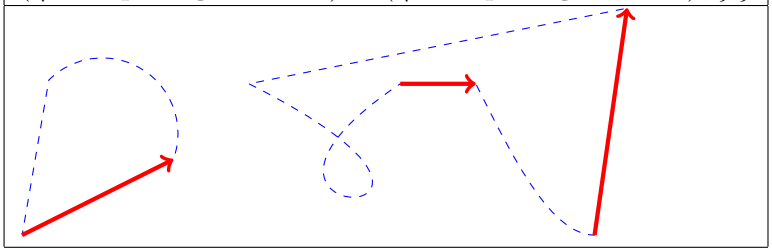
Chemin à décorer

\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) - - cycle ;



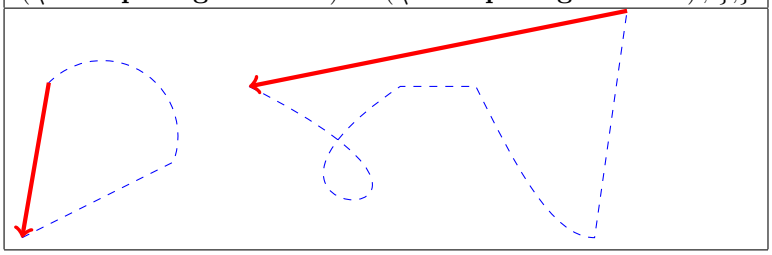
composants linéaires « lineto » :

```
decoration={ show path construction,
lineto code={ \draw [red,ultra thick,->]
(\tikzinputsegmentfirst) - - (\tikzinputsegmentlast); },}
```



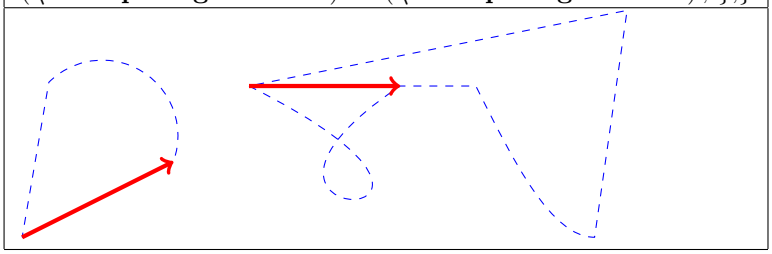
Fermetures de chemin « closepath » :

```
decoration={ show path construction,
closepath code={ \draw [red,ultra thick,->]
(\tikzinputsegmentfirst) - - (\tikzinputsegmentlast); },}
```



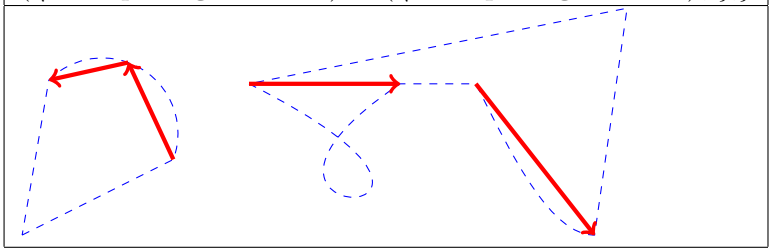
coupure de chemin « moveto code » :

```
decoration={ show path construction,
moveto code={ \draw [red,ultra thick,->]
(\tikzinputsegmentfirst) - - (\tikzinputsegmentlast); },}
```

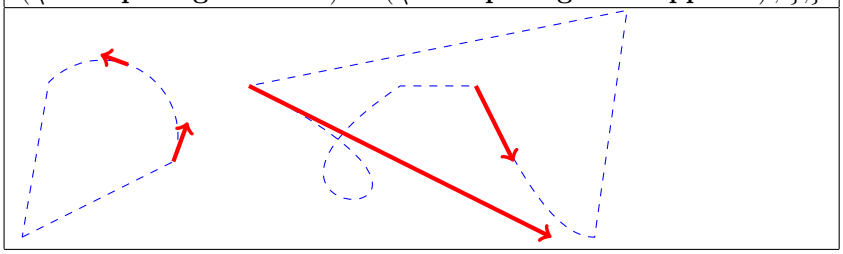


composants courbes « curveto » :

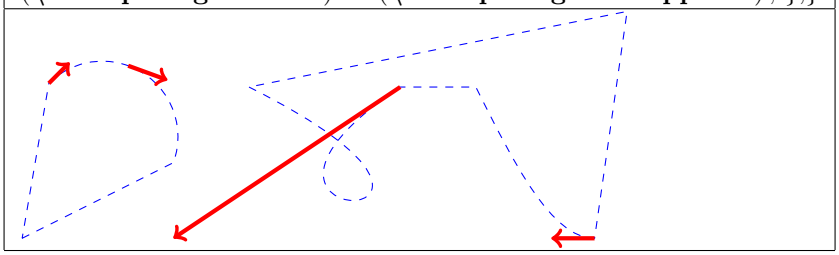
```
decoration={ show path construction,
curveto code={ \draw [red,ultra thick,->]
(\tikzinputsegmentfirst) - - (\tikzinputsegmentlast); },}
```



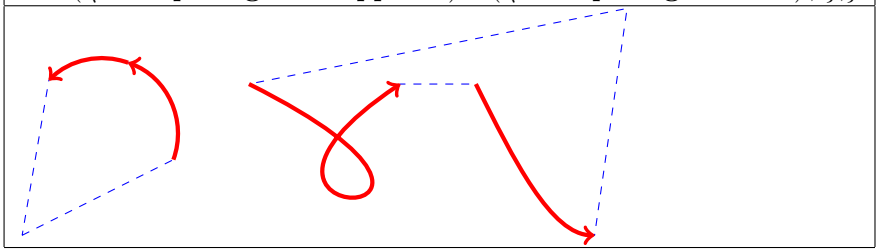
```
decoration={ show path construction,
curveto code={ \draw [red,ultra thick,->]
(\tikzinputsegmentfirst) - - (\tikzinputsegmentsupporta); },}
```



```
decoration={ show path construction,
curveto code={ \draw [red,ultra thick,->]
(\tikzinputsegmentlast) - - (\tikzinputsegmentsupportb); },}
```



```
decoration={ show path construction,
curveto code={ \draw [red,ultra thick,->]
(\tikzinputsegmentfirst) .. controls (\tikzinputsegmentsupporta)
and (\tikzinputsegmentsupportb) .. (\tikzinputsegmentlast); },}
```



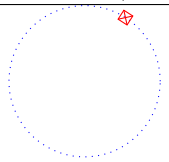
12.3 Library « decorations.markings »

Insérer dans le préambule :

```
\usetikzlibrary{decorations.markings}
```

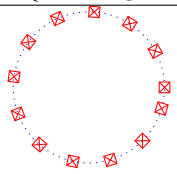
12.3.1 Sa marque à une position

```
\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) ;
```

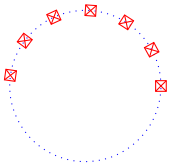


12.3.2 Ses marques : origine, fin et pas

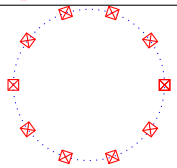
```
\draw[decorate,{markings,mark=between positions 0 and 1 step 5mm with ... }] (1,1) circle (1) ; ;
```



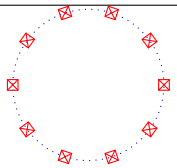
mark=between positions 0 and 1 step 5mm



between positions 0 and 0.5 step 5mm



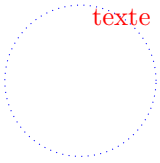
mark= between positions 0 and 1 step 1/10



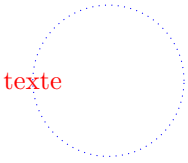
between positions 0 and 1 step0.1

12.3.3 Marque avec un nœud contenant du texte

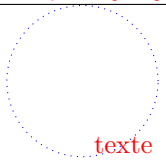
```
decoration={markings,mark=at position 1cm with \node[red]{texte}}
```



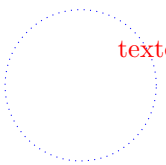
at position 1cm



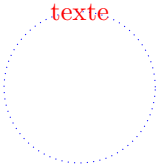
at position 0.5



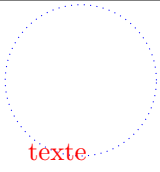
at position -1cm



at position 1cm/2



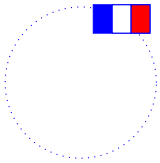
at position 0.5/2



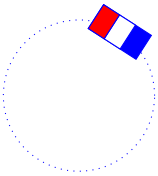
at position -0.5/2

12.3.4 Marque avec un nœud contenant une image

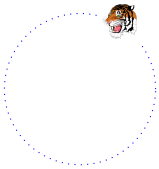
\draw [decorate,decoration={markings,mark=at position 1cm with \node{\DFR} ; }] (1,1) circle (1) ;



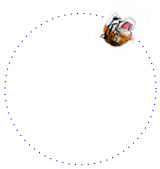
\node{\DFR}



\node[transform shape]{\DFR}

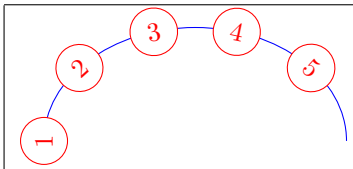


\node{
\includegraphics[width=0.5cm]{tiger} }

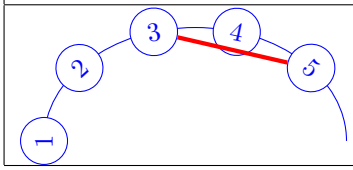


\node[transform shape]{
\includegraphics[width=0.5cm]{tiger} }

12.3.5 Numérotation des marques et affectation d'un nom

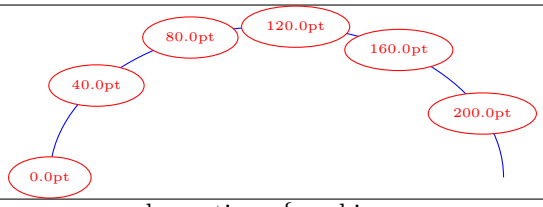


decoration={markings,
mark=between positions 0 and 1 step 0.2
with { \node [draw , circle ,fill=white, name=
marque-**\pgfkeysvalueof**{/pgf/decoration/mark info/sequence number},
transform shape]
{**\pgfkeysvalueof**{/pgf/decoration/mark info/sequence number}};}}



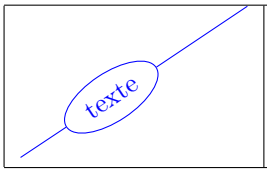
\draw [red,ultra thick] (marque-3) - - (marque-5) ;

12.3.6 Distance des nœuds



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

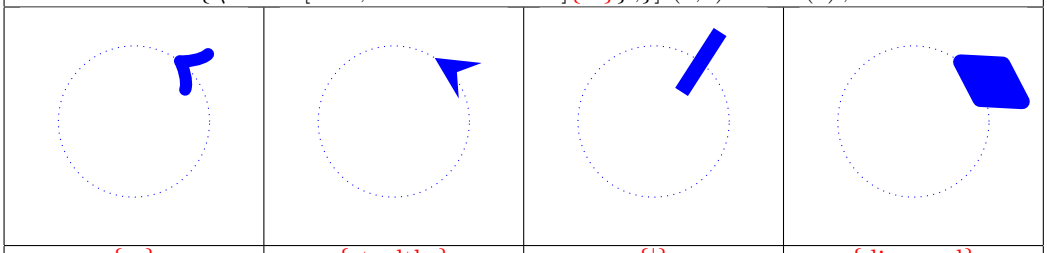
12.3.7 Nœud sur une liaison



\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) ;

12.3.8 Arrow Tip Markings

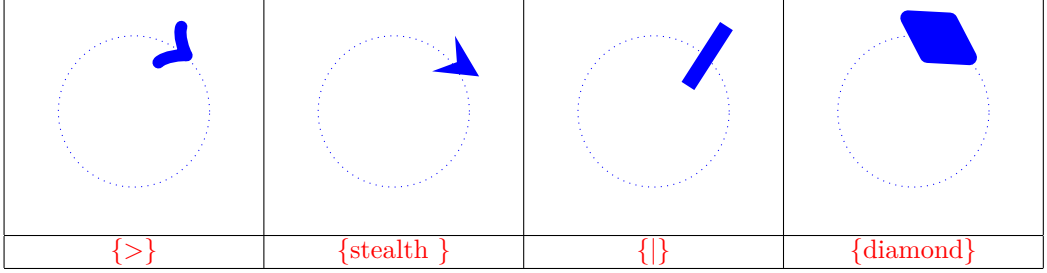
\draw[decorate,decoration={ markings,mark=at position 1cm with {**arrow**[blue,line width=2mm]{>}};}] (1,1) circle (1);



{>}	{stealth }	{|}	{diamond}

Autres possibilités et paramètres voir page 9 et suivantes

\draw[decorate,decoration={markings,mark=at position 1cm with {**arrowreversed**[blue,line width=2mm]{>}};}] (1,1) circle (1);



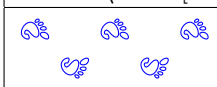
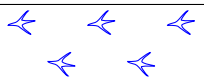
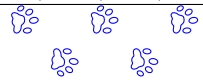
{>}	{stealth }	{|}	{diamond}

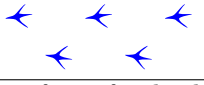
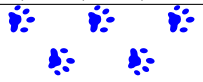
12.4 Library « decorations.footprints »

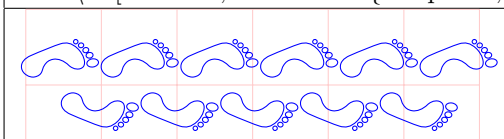
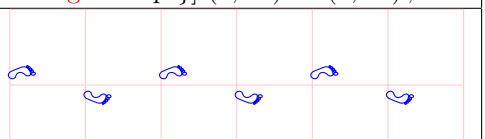
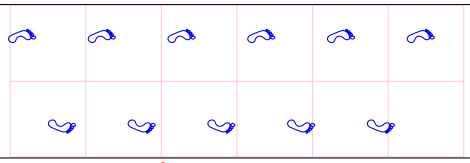
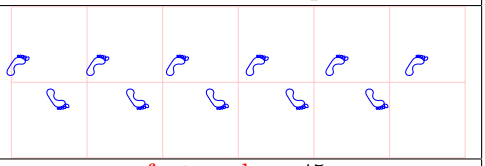
Insérer dans le préambule :

```
\usetikzlibrary{decorations.footprints}
```

\tikz \draw[decorate,decoration=footprints] (0,0) – (10,0) ;


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

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

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

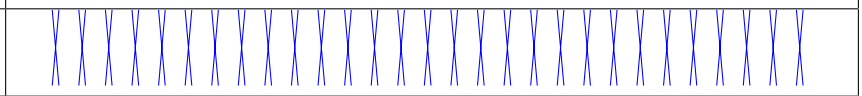
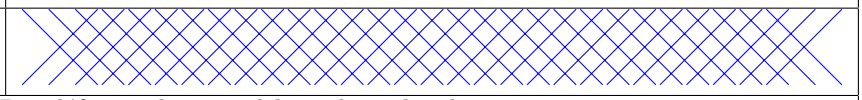
12.5 Library « decorations.shapes »

12.5.1 introduction

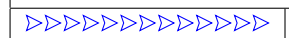
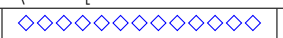
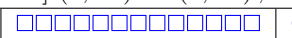
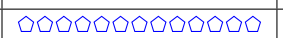
Insérer dans le préambule :

```
\usetikzlibrary{decorations.shapes}
```

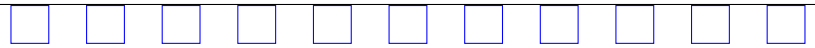
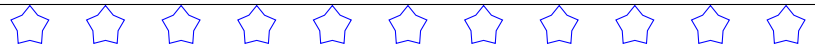
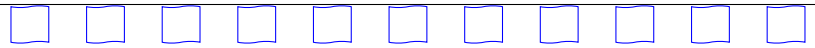
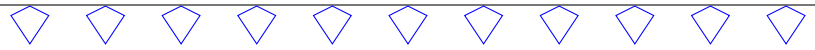
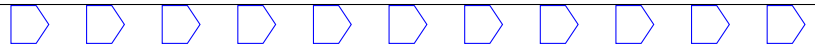
\draw[decorate,decoration=crosses] (0,0) - - (3,0) ;		
		
crosses	triangles	shape backgrounds

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

12.5.2 Décoration « shape backgrounds »

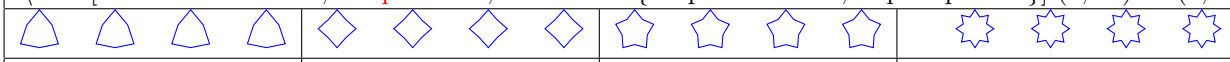
\draw[decorate with=dart] (0,2.5) - - (3,2.5) ;			
			
dart	diamond	rectangle	circle
			
star	regular polygon	signal	kite
Autres possibilités et paramètres voir page 30 et suivantes			

Formes :

syntaxe	\draw[decorate,decoration={ shape backgrounds,shape=dart, shape size=.5cm,shape sep=1cm}] (0,0) - - (10,0) ;
Autre syntaxe	\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 30 et suivantes	

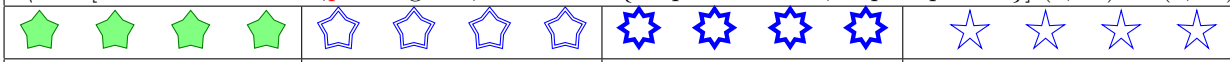
Paramètres :

\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) ;



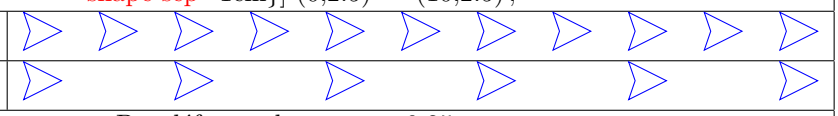
paint=green	double	ultra thick	star point ratio = 3

Espacement :

\draw[decorate with=dart,decoration={shape size=.5cm, shape sep=1cm}] (0,2.5) - - (10,2.5) ;

shape sep={1cm}

shape sep={2cm}



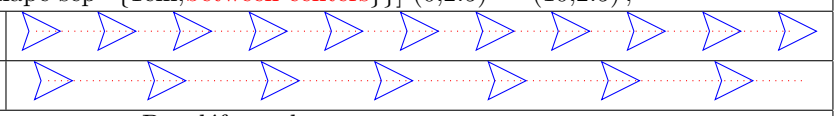
Par défaut : shape sep= 0.25cm

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



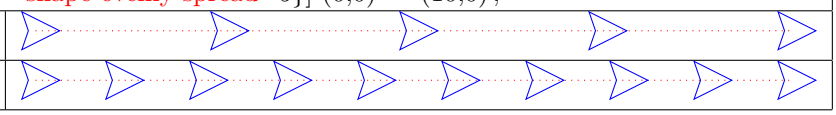
Par défaut : between centers

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



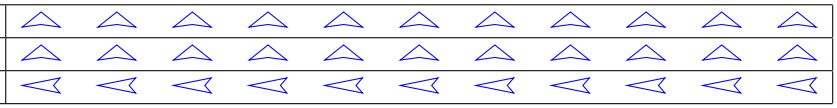
Orientation :

Paramètre « shape border rotate » :

shape border rotate=90

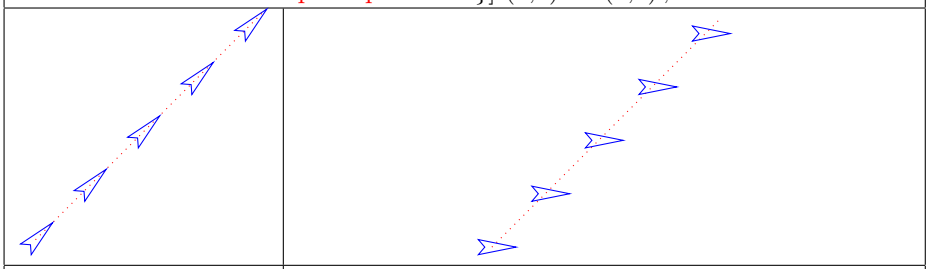
shape border rotate=45

shape border rotate=180



Paramètre « shape sloped » :

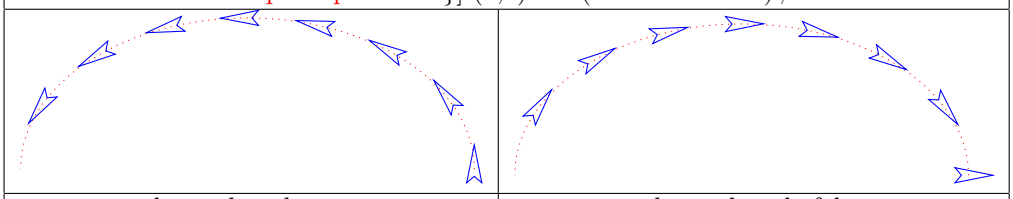
\draw[decorate with=dart,decoration={shape width=.5cm,shape sep=1cm, shape sloped=true}] (0,0) - - (3,3) ;



shape sloped=true	shape sloped=false

Par défaut : shape sloped=true

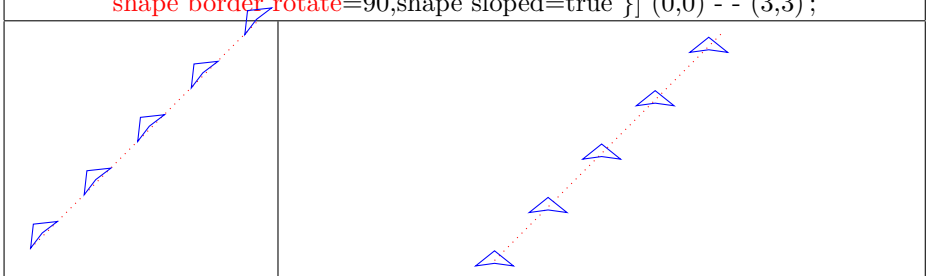
\draw[decorate with=dart,decoration={shape width=.5cm,shape sep=1cm, shape sloped=true}] (0,0) arc (0 :180 :3 and 2) ;



shape sloped=true	shape sloped=false

Par défaut : shape sloped=true

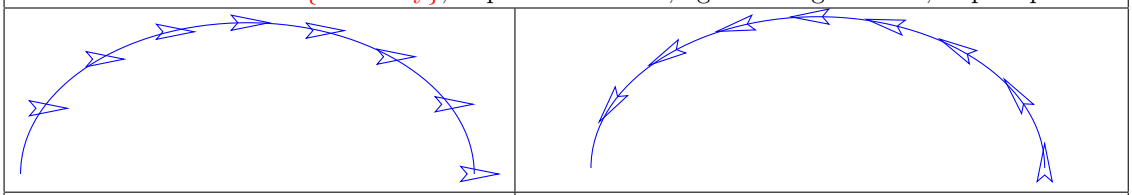
\draw[decorate with=dart,decoration={shape width=.5cm,shape sep=1cm, shape border rotate=90,shape sloped=true }] (0,0) - - (3,3) ;



shape sloped=true	shape sloped=false

Paramètre « shift only » :

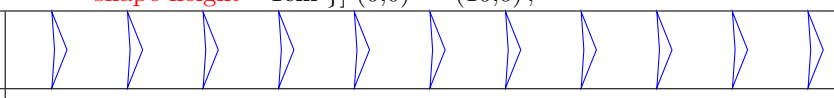
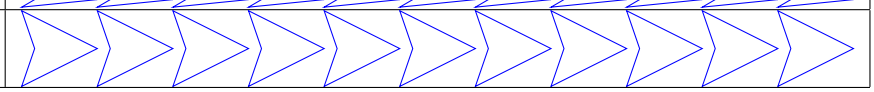
decoration= transform={shift only},shape width=5mm,segment length=.5cm,shape sep=1cm

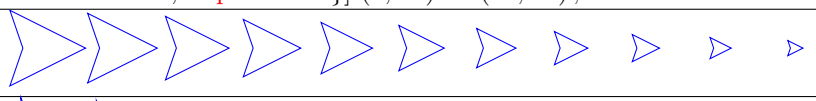
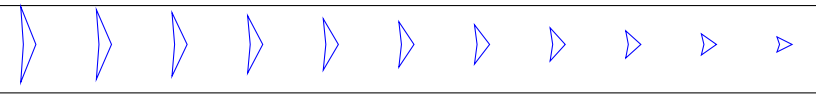
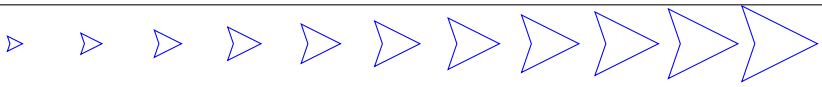


avec	sans

Dimensions :

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

shape height=1cm	
shape width=1cm	
shape size=1cm	

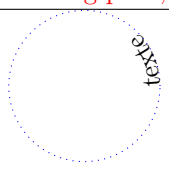
\draw[decorate with=dart,decoration={shape size=.5cm, shape start size=1cm,shape scaled }] (0,2.5) - - (10,2.5) ;	
shape start size=1cm	
shape start height=1cm	
shape start width=1cm	
shape end size=1cm	
shape end height=1cm	
shape end width=1cm	

12.6 Library « decorations.text »

Insérer dans le préambule :

```
\usetikzlibrary{decorations.text}
```

```
\draw[decorate,decoration={text along path,text={texte}}] (1,1) circle (1) ;
```

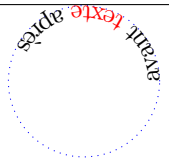


Texte trop long :

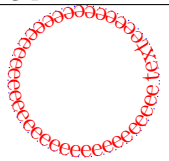
```
\draw[decorate,decoration={text along path,
text={Un Deux Trois Quatre Cinq Six sept Huit Neuf Dix}}] (1,1) circle (1) ;
```

Format du texte :

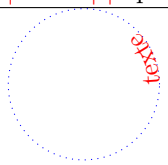
```
\draw [decorate,decoration={text along path, text=avant |\red | texte | | après }]
```



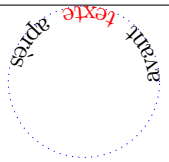
text={avant |\red|texte|| après }



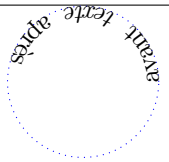
text={ |\red|texte|| }



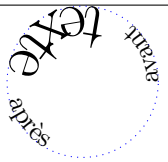
text={ |\red|texte|| {} }



avant | \red| texte || après

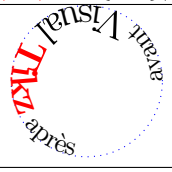


avant | \it| texte || après

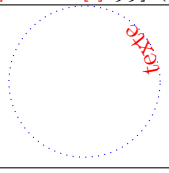


avant | \Huge| texte || après

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

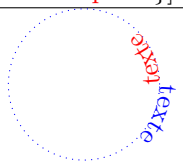



```
\draw [decorate,decoration={text along path,text format delimiters={[}{]},
text={ [ \red ] texte [ ] }}] (1,1) circle (1) ;
```



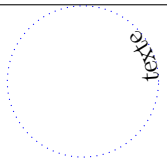
Sens du texte :

```
\draw[decorate,decoration={text along path,text={texte},
text color=blue, reverse path }] (1,1) circle (1) ;
```

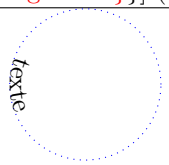


Position du texte :

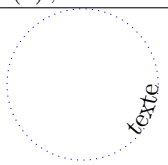
```
\draw[decorate,decoration={ text along path,text={texte},
text align={align=left}}] (1,1) circle (1) ;
```



align={align=left}

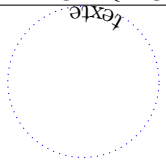


align={align=center}

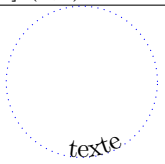


align={align=right}

```
\draw[ decorate,decoration={text along path,text={texte},
text align={align=left,left indent=1cm} } ] (1,1) circle (1) ;
```



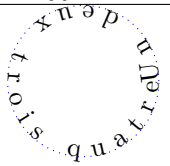
align={align=left,left indent=1cm}



align={align=right,right indent=1cm}

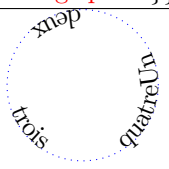
Justification du texte :

```
\draw [decoration={text along path, text={Un deux trois quatre },
text align={fit to path}}, decorate] (1,1) circle (1) ;
```



Justification des espaces :

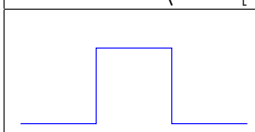
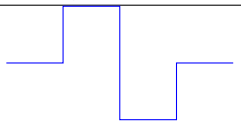
```
\draw [decoration={text along path, text={Un deux trois quatre },
text align={fit to path stretching spaces}}, decorate] (1,1) circle (1) ;
```

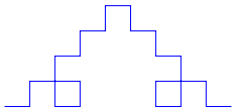
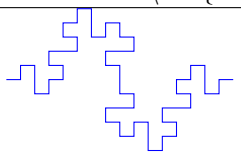


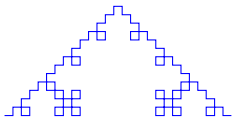
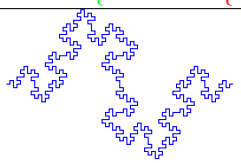
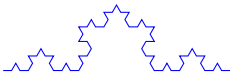
12.7 Library « decorations.fractals »

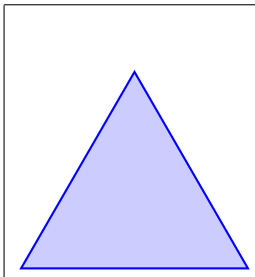
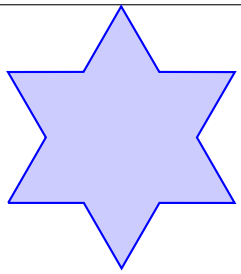
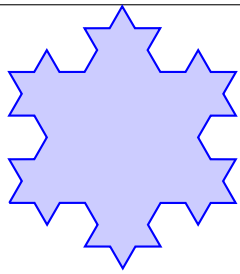
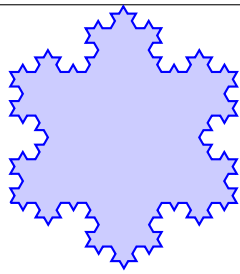
Insérer dans le préambule :

```
\usetikzlibrary{decorations.fractals}
```

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

\begin{tikzpicture}[decoration=Koch curve type 1] \draw decorate { decorate { (0,0) – (3,0) } } ; \end{tikzpicture}			
			
Koch curve type 1	Koch curve type 2	Koch snowflake	Cantor set

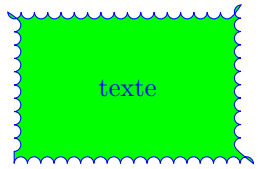
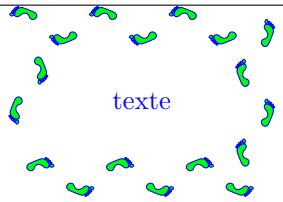
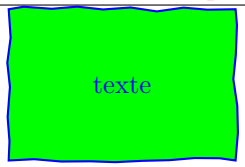
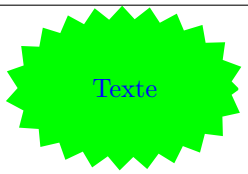
\draw decorate { decorate { decorate { (0,0) - - (3,0) } } } ;			
			
Koch curve type 1	Koch curve type 2	Koch snowflake	Cantor set

			
sans	1 decorate	2 decorate	3 decorate

12.8 Applications

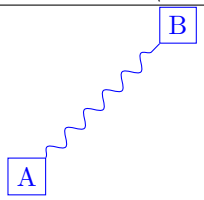
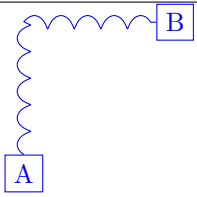
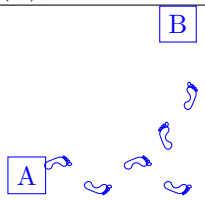
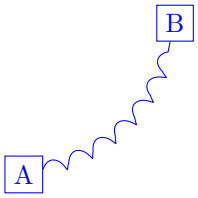
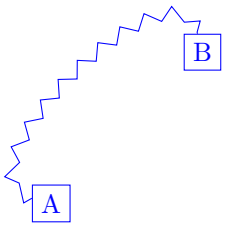
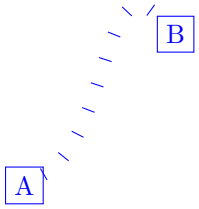
12.8.1 Décoration d'un nœud

\node [draw,decorate,decoration={bumps, minimum height=2cm, minimum width=3cm}] {texte} ;

<table>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>decoration=bumps</td><td>decoration=footprints</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>decoration={random steps , amplitude = 1pt }</td><td>starburst,decoration={random steps,
segment length=3pt , amplitude=2pt}</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>ellipse,decoration=zigzag</td><td>decoration= {text along path,text=
{Un Deux Trois Quatre Cinq Six Sept Huit Neuf} }</td></tr>
</table>

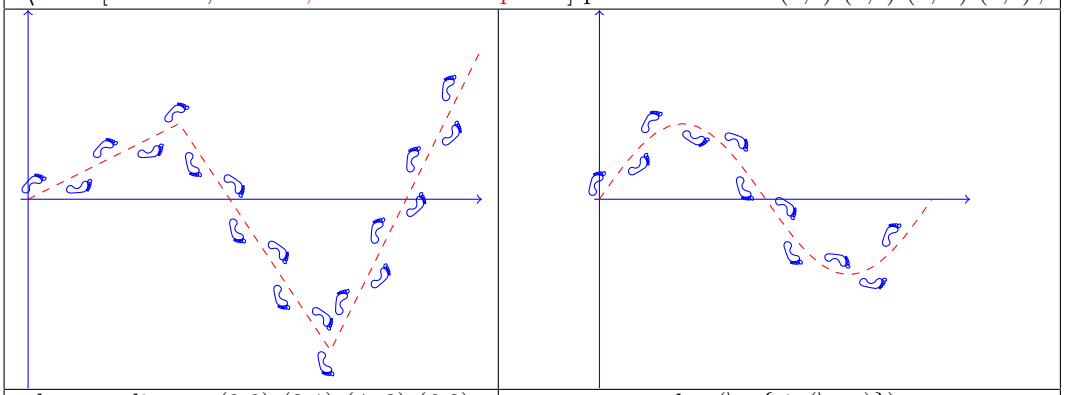
12.8.2 Décoration de liaisons de noeuds

\draw [decorate,decoration=snake](A) – (B) ;

<table>
<tr><td> 
</td><td> 
</td><td> 
</td></tr>
<tr><td>decoration=snake
(A)- - (B)</td><td>decoration=coil
(A) |- (B)</td><td>decoration=footprints
(A) -| (B)</td></tr>
<tr><td> 
</td><td> 
</td><td> 
</td></tr>
<tr><td>decoration=coil
(A) to [bend right] (B)</td><td>decoration=zigzag
(A) to[bend left=120] (B)</td><td>decoration=ticks
(A) to[out=30] (B)</td></tr>
</table>

12.8.3 Décoration d'un graphe

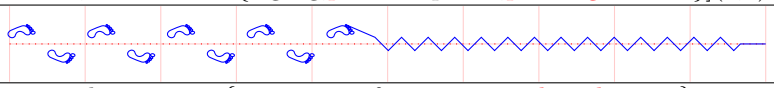
\draw[decorate, ecorate,decoration=footprints] plot coordinates (0,0) (2,1) (4,-2) (6,2) ;



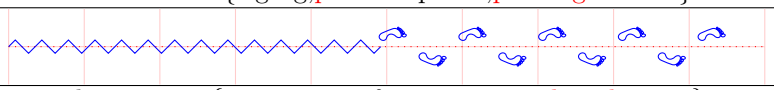
plot coordinates (0,0) (2,1) (4,-2) (6,2) | plot (\x,{sin(\x r)})

12.8.4 Décorations variables

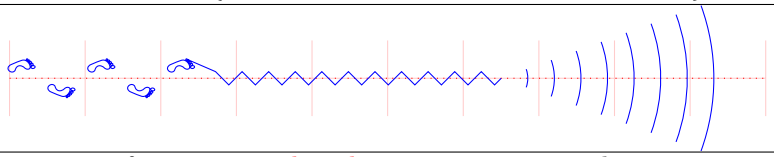
\draw [decorate, decoration={zigzag,pre=footprints,pre length=5cm}](0,0) – (10,0) ;



decoration={zigzag,pre=footprints,pre length=5cm}

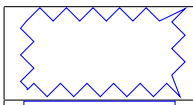


decoration={zigzag,post=footprints,post length=5cm}

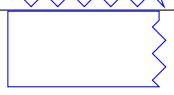


decoration={zigzag,pre=footprints,pre length=3cm, ,post=expanding waves,post length=3cm}

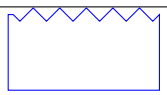
12.8.5 Décoration partielle



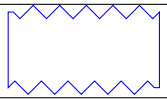
\draw [decorate,decoration=zigzag] (0,0) – (2,0) – (2,1) – (0,1)– cycle ;



\draw [decoration=zigzag] (0,0) – (2,0) decorate{– (2,1)} – (0,1)– cycle ;



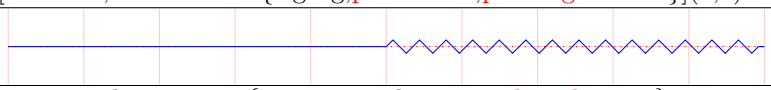
\draw [decorate,decoration=zigzag] (0,0) – (2,0) – (2,1) – decorate{(0,1)}– cycle ;



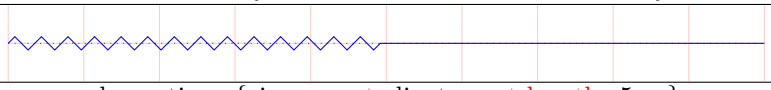
\draw [decorate,decoration=zigzag] (0,0) decorate{– (2,0)} – (2,1) – decorate{(0,1)}– cycle ;

Décorations partielles avec « lineto » :

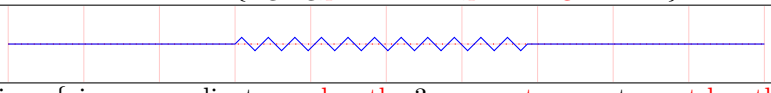
```
\draw [decorate, decoration={zigzag,pre=lineto,pre length=5cm}](0,0) – (10,0);
```



decoration={zigzag,pre=lineto,pre length=5cm}



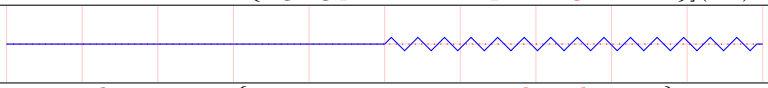
decoration={zigzag,post=lineto,post length=5cm}



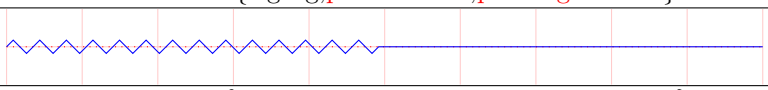
decoration={zigzag,pre=lineto,pre length=3cm, ,post=curveto,post length=3cm}

Décorations partielles avec « curveto » :

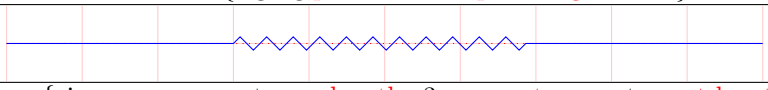
```
\draw [decorate, decoration={zigzag,pre=curveto,pre length=5cm}](0,0) – (10,0);
```



decoration={zigzag,pre=curveto,pre length=5cm}



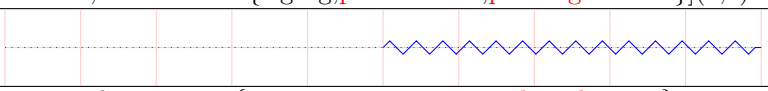
decoration={zigzag,post=curveto,post length=5cm}



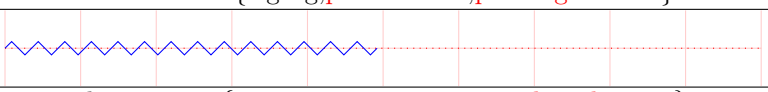
decoration={zigzag,pre=curveto,pre length=3cm, ,post=curveto,post length=3cm}

Décorations partielles avec « moveto » :

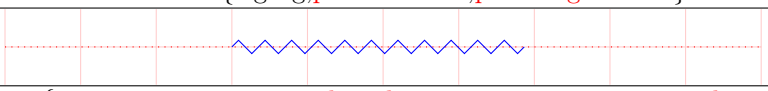
```
\draw [decorate, decoration={zigzag,pre=moveto,pre length=5cm}](0,0) – (10,0);
```



decoration={zigzag,pre=moveto,pre length=5cm}

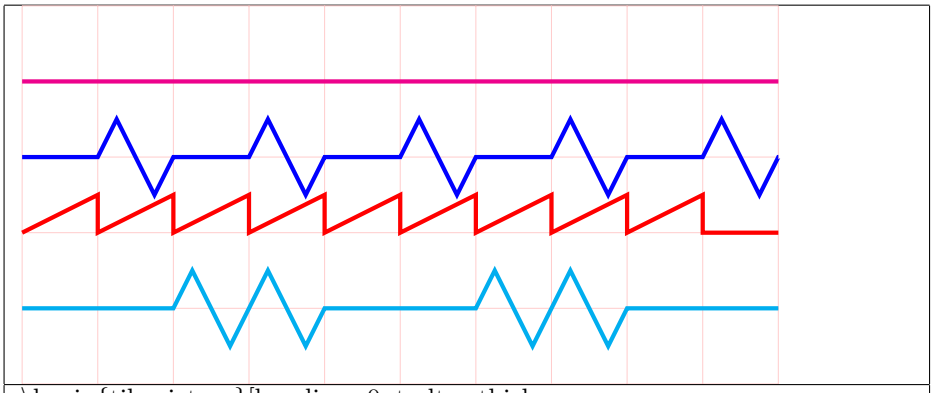


decoration={zigzag,post=moveto,post length=5cm}



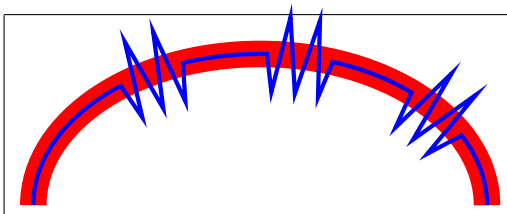
decoration={zigzag,pre=moveto,pre length=3cm, ,post=moveto,post length=3cm}

12.8.6 Paramètres globaux ou particuliers



```
\begin{tikzpicture}[baseline=0pt,ultra thick,
decoration={straight zigzag,amplitude=0.5cm,segment length=1cm}]
\draw[red !20,ultra thin] (0,-2) grid (10,3) ;
\draw[magenta] (0,2) -- (10,2) ;
\draw[blue,decorate] (0,1) -- (10,1) ;
\draw[red,decorate,decoration=saw] (0,0) -- (10,0) ;
\draw[cyan,decorate,decoration=meta-segment length=2cm] (0,-1) -- (10,-1) ;
\end{tikzpicture}
```

12.8.7 Tracer le chemin et sa décoration avec « Postaction »

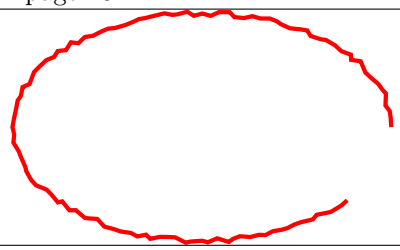
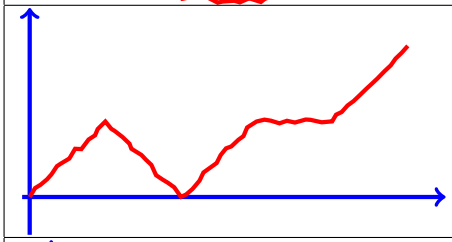
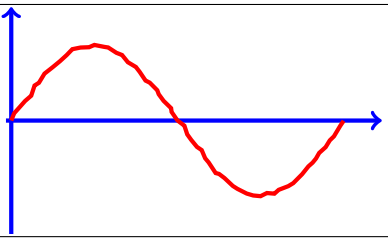


```
\draw [postaction={decorate,blue,draw,ultra thick,
decoration={straight zigzag,amplitude=0.5cm}}]

[red,line width = 10pt ] (0,0) arc (0 :180 :3 and 2) ;
```

13 Des lignes et liaisons spéciales

13.1 Trait à main levée

voir page 46

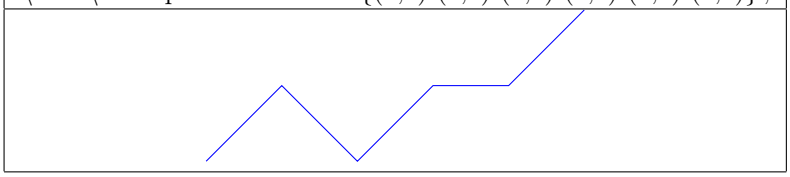
	\draw[decorate,decoration={random steps, amplitude=1pt,segment length=3pt}] (0,0) arc (0 :320 :2.5 and 1.5) ;
	\draw[decorate,decoration={random steps, amplitude=1pt,segment length=3pt}] plot coordinates (0,0) (1,1) (2,0) (3,1) (4,1) (5,2) ;
	\draw[decorate, decoration={random steps, amplitude=1pt,segment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

14 Créer un graphe

14.1 Graphe avec Tikz

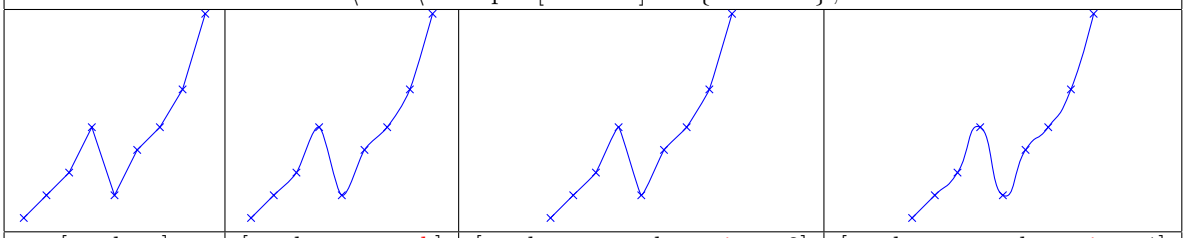
14.1.1 Graphe à partir d'une liste de points

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



14.1.2 Graphe à partir partir d'un fichier de données

```
\tikz \draw plot[mark=x] file {table.dat} ;
```



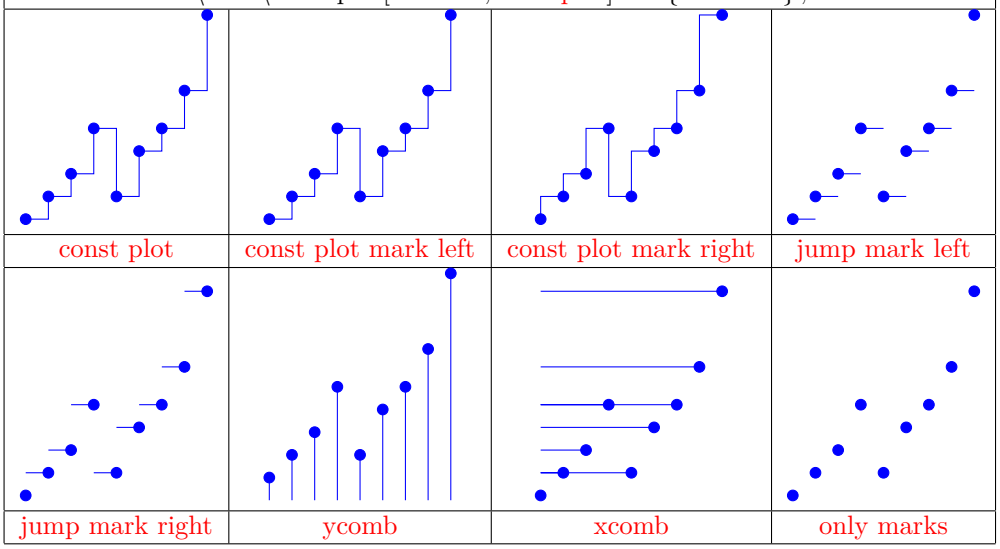
[mark=x]	[mark=x,smooth]	[mark=x,smooth,tension=.2]	[mark=x,smooth,tension=1]

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

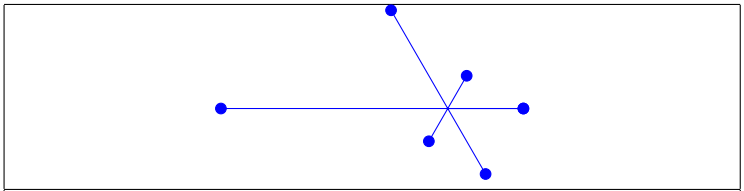
14.1.3 Les types de graphes

\tikz \draw plot[mark=*,const plot] file {table.dat} ;



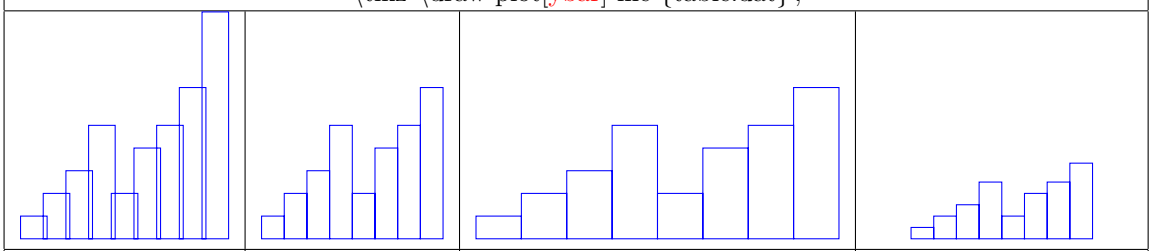
const plot | const plot mark left | const plot mark right | jump mark left

jump mark right | ycomb | xcomb | only marks

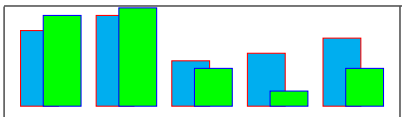


\tikz \draw plot[polar comb,mark=*]coordinates
{(0 :1) (60 :0.5) (120 :1.5) (180 :3) (240 :.5) (300 :1) (0 :1)} ;

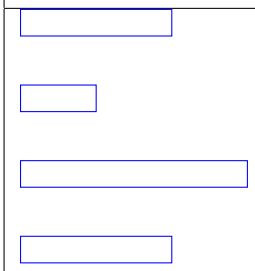
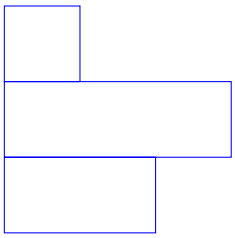
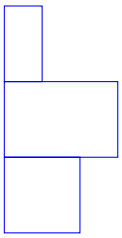
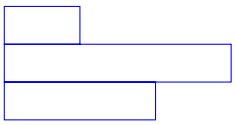
\tikz \draw plot[ybar] file {table.dat} ;



[ybar] | [ybar interval] | [ybar interval,x=2cm] | [ybar interval,y=.5cm]

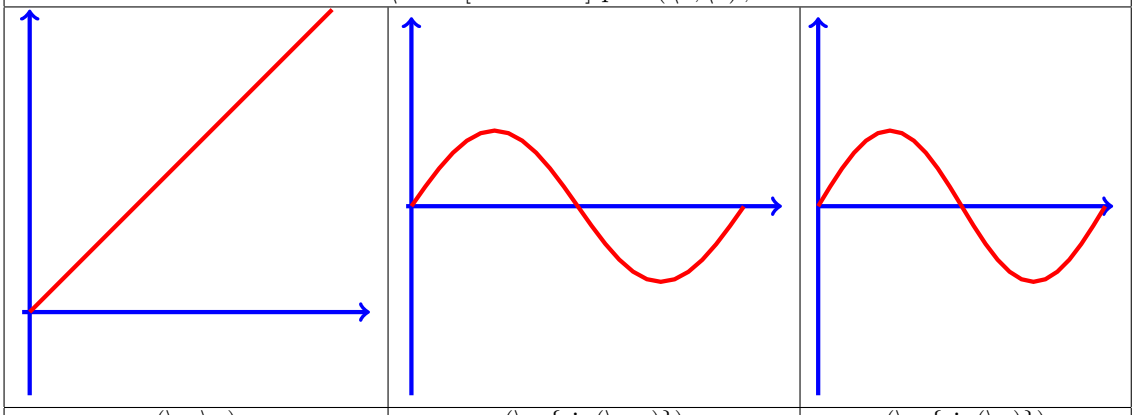


```
\begin{tikzpicture}
\draw[red,fill=cyan,ybar,bar width=.5cm]
        plot coordinates {(0,1) (1,1.2) (2,.6) (3,.7) (4,.9)} ;
\draw[blue,fill=green,ybar,bar width=.5cm,bar shift=.3cm]
        plot coordinates {(0,1.2) (1,1.3) (2,.5) (3,.2) (4,.5)} ;
\end{tikzpicture}
```

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

14.1.4 Graphe à partir d'une fonction

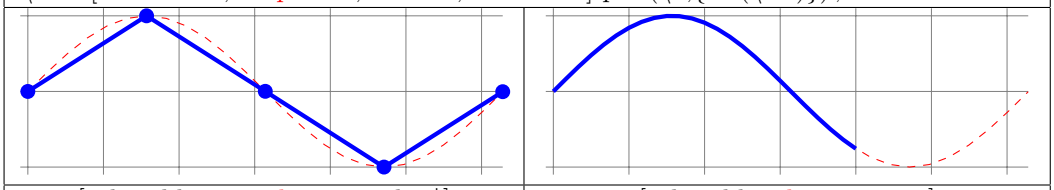
\draw [color=red] plot (\x,\x) ;



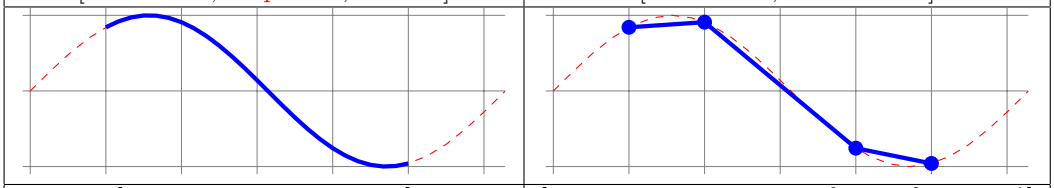
(\x,\x) | (\x,{sin(\x r)}) x en radian | (\x,{sin(\x)}) x en degré

Options

```
\draw[color=red,dashed] plot(\x,{sin(\x r)}) ;
\draw[color=blue,samples=5,mark=*,ultra thick] plot(\x,{sin(\x r)}) ;
```



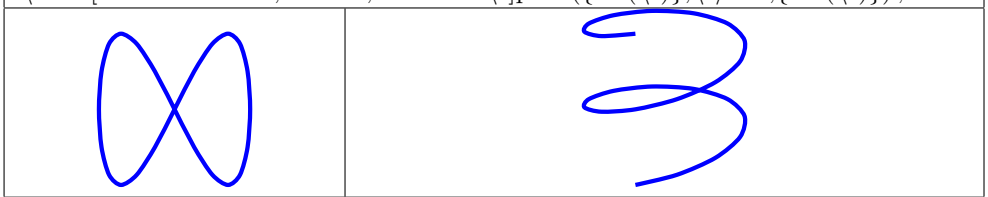
[color=blue,samples=5,mark=*] | [color=blue,domain=0 :4]



[color=blue,domain=1 :5] | [color=blue,samples at={1,2,4,5},mark=*]

14.1.5 Fonctions paramétriques

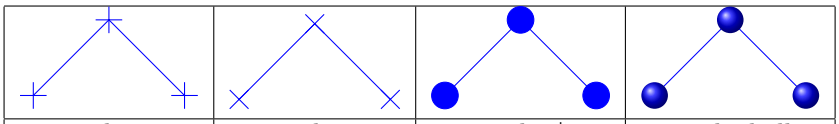
```
\draw[domain=-3.141 :3.141,smooth,variable=\t]plot ({sin(\t r)},{sin(2 *\t r)}) ;
\draw[domain=0 :720,smooth,variable=\t]plot ({sin(\t)},\t/360,{cos(\t)}) ;
```



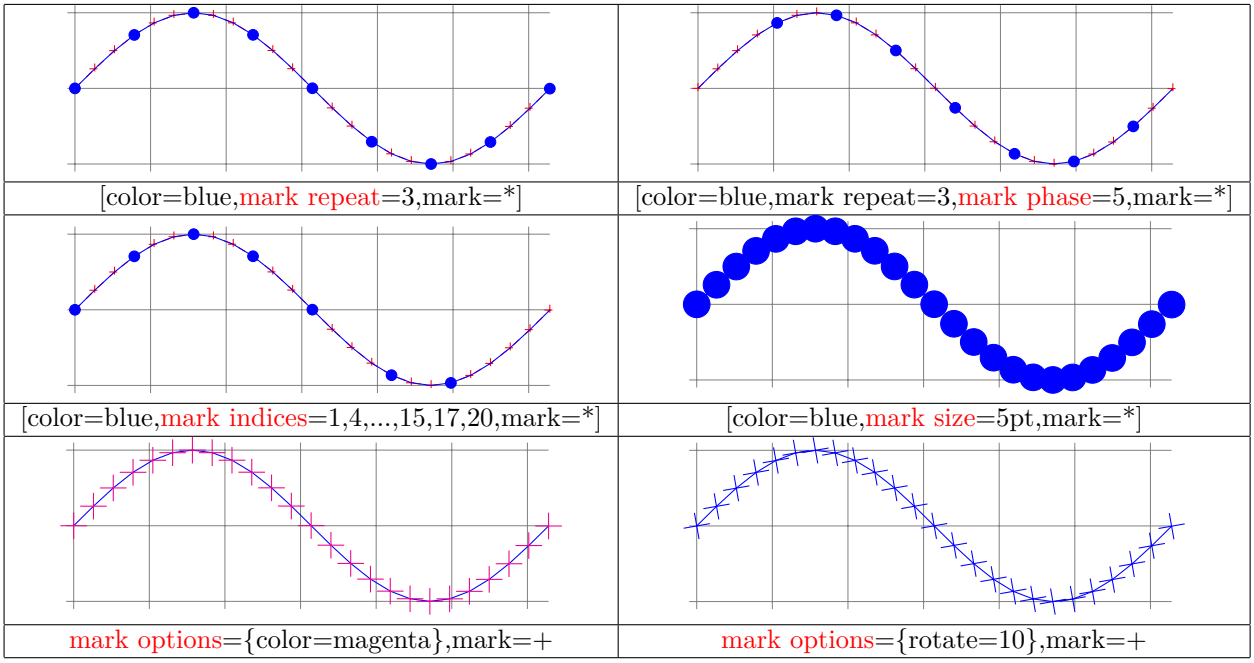
({sin(\t r)},{sin(2 *\t r)}) | ({sin(\t)},\t/360,{cos(\t)})

14.2 Marques

14.2.1 Marques avec Tikz

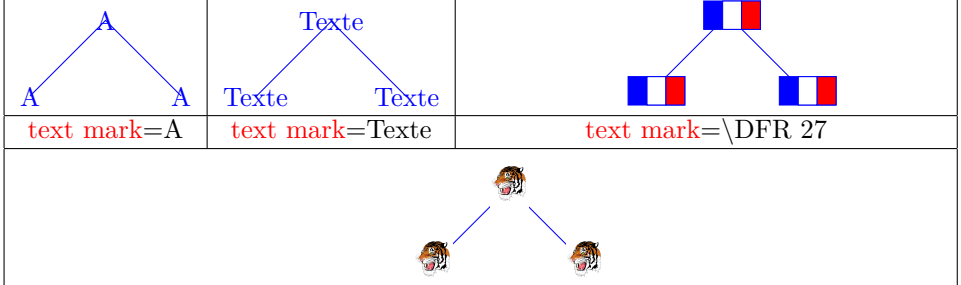


mark=+ | mark=x | mark=* | mark=ball



14.2.2 Marques personnalisées avec text mark

\draw[mark=text,text mark=A,mark size=5pt] coordinates {(0,0) (1,1) (2,0)};



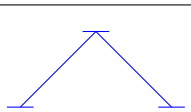
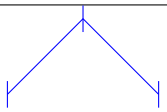
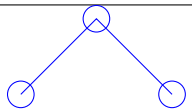
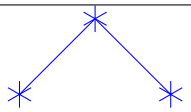
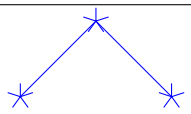
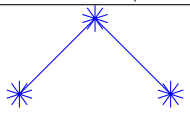
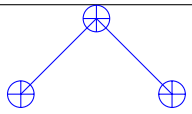
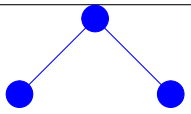
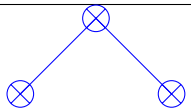
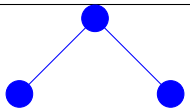
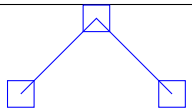
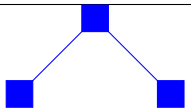
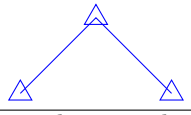
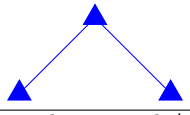
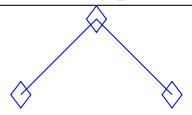
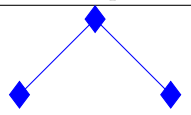
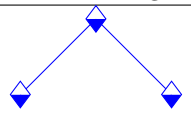
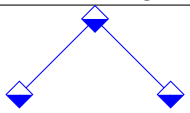
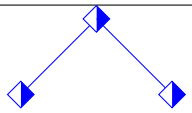
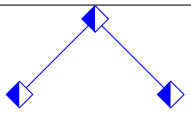
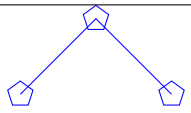
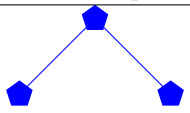
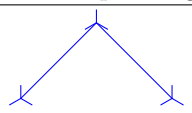
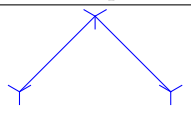
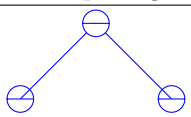
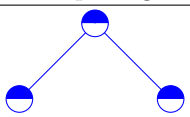
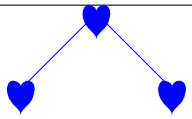
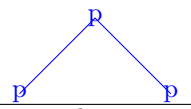
text mark=A | text mark=Texte | text mark=\DFR 27

text mark={\includegraphics[width=.5cm]{tiger}}

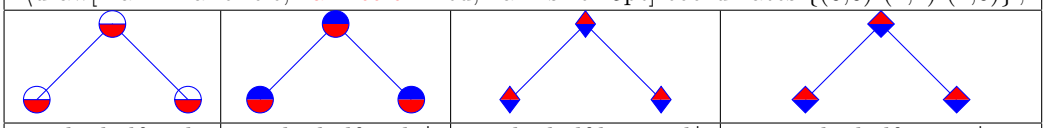
14.2.3 Marques avec l'extension plotmarks

Insérer dans le préambule :

```
\usetikzlibrary{plotmarks}
```

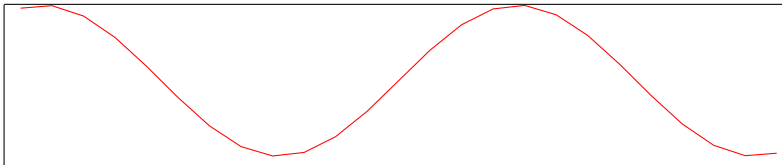
			
mark=-	mark=|	mark=o	mark=asterisk
			
mark=star	mark=10-pointed star	mark=oplus	mark=oplus*
			
mark=otimes	mark=otimes*	mark=square	mark=square*
			
mark=triangle	mark=triangle*	mark=diamond	mark=diamond*
			
mark=halfdiamond*	mark=halfsquare*	mark=halfsquare right*	mark=halfsquare left*
			
mark=pentagon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

14.3 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 »
Pour les tracés suivant, le fichier « sin.table »sera utilisé

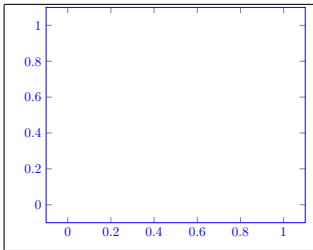
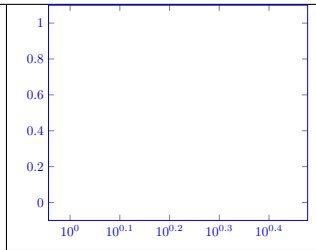
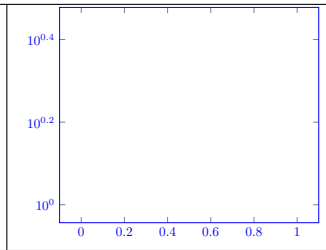
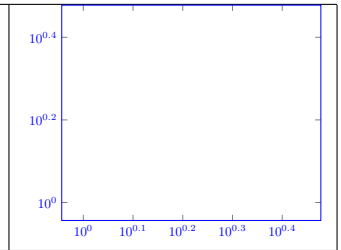
15 Créer un graphe avec pgfplot [2]

Insérer dans le préambule

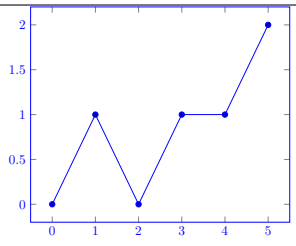
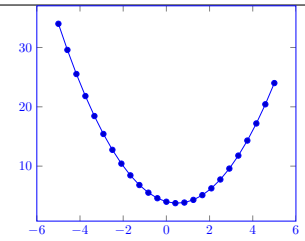
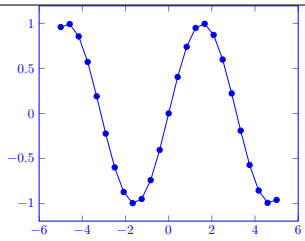
```
\usepackage{pgfplots}
```

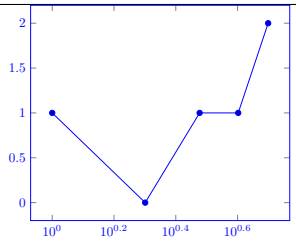
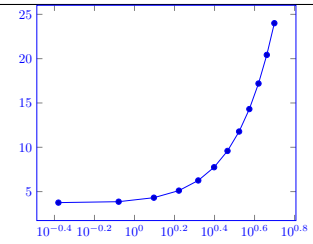
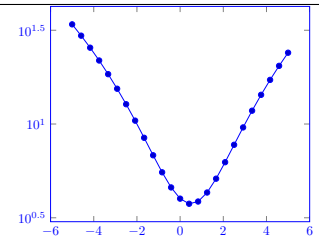
15.1 Courbes 2 D

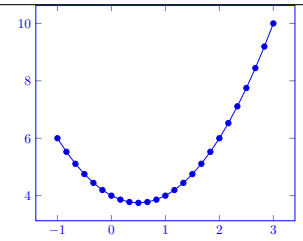
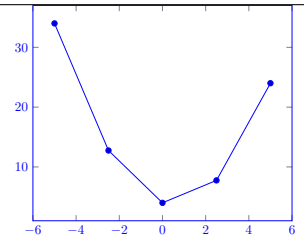
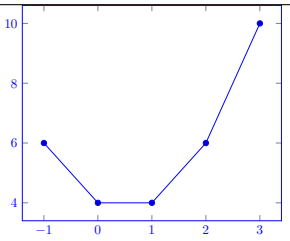
15.1.1 Axes

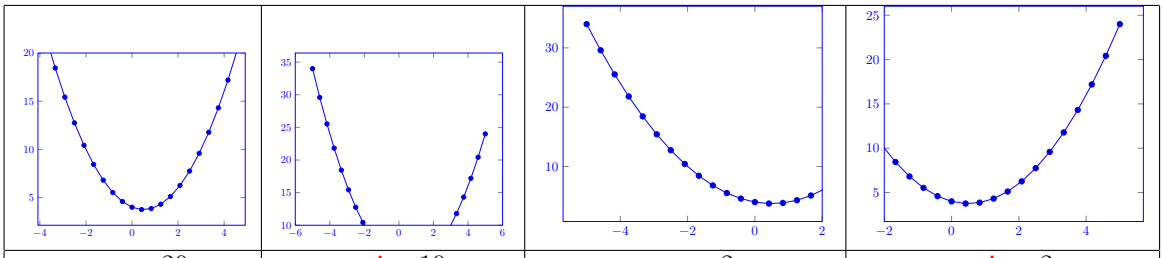
			
\begin{axis} \end{axis}	**\begin{semilogxaxis}** \end{semilogxaxis}	**\begin{semilogyaxis}** \end{semilogyaxis}	**\begin{loglogaxis}** \end{loglogaxis}

15.1.2 Tracé de la courbe

		
\addplot coordinates {(0,0) (1,1) (2,0) (3,1) (4,1) (5,2)} ;	**\addplot** {x^2 - x +4} ;	**\addplot** gnuplot[id=sin]{sin(x)} ;

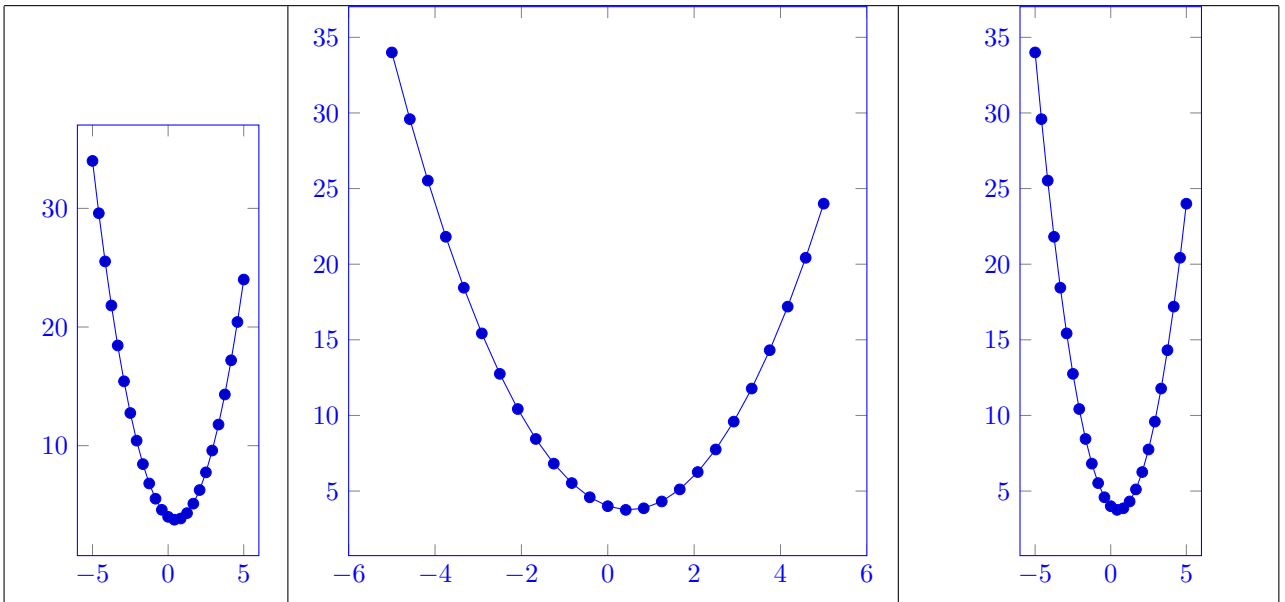
		
axes : semilogxaxis	axes : semilogxaxis	axes : semilogyaxis
\addplot coordinates {(0,0) (1,1) (2,0) (3,1) (4,1) (5,2)} ;	**\addplot** {x^2 - x +4} ;	**\addplot** {x^2 - x +4} ;

		
\begin{axis}[domain=-1 :3]	\begin{axis}[samples=5]	\begin{axis}[domain=-1 :3,samples=5]



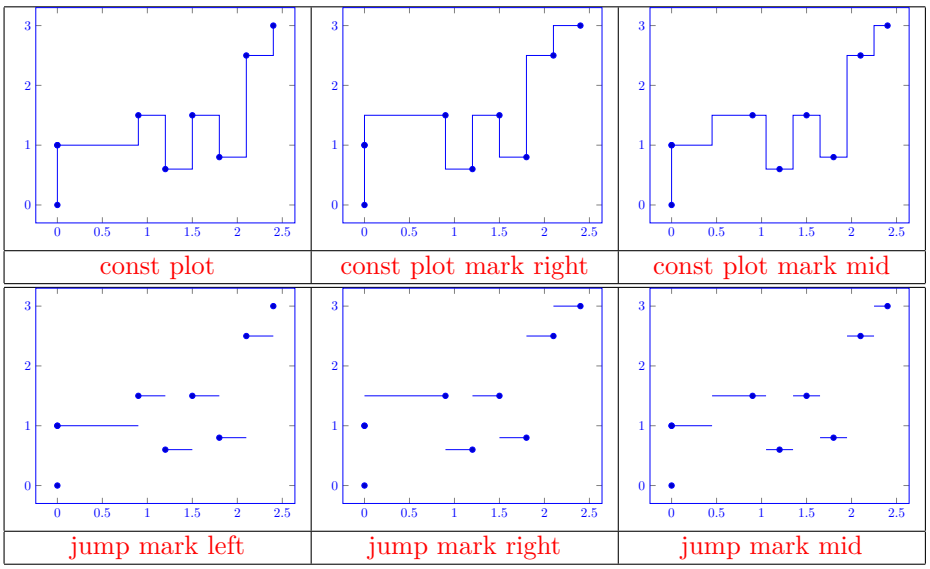
ymax=20	ymin=10	xmax=2	xmin=-2

15.1.3 Dimension unitaire en X et Y

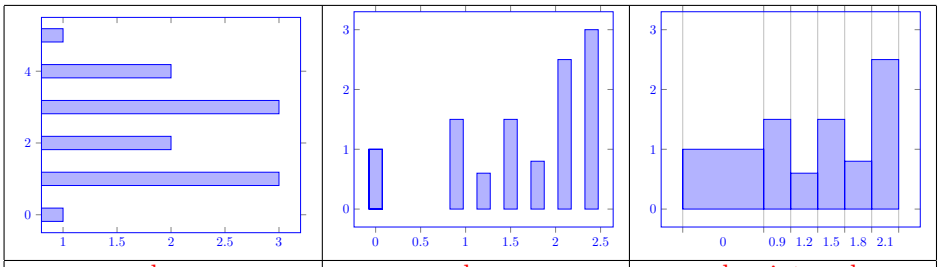


\begin{axis}[x=.2cm]	\begin{axis}[y=.2cm]	\begin{axis}[x=.2cm,y=.2cm]

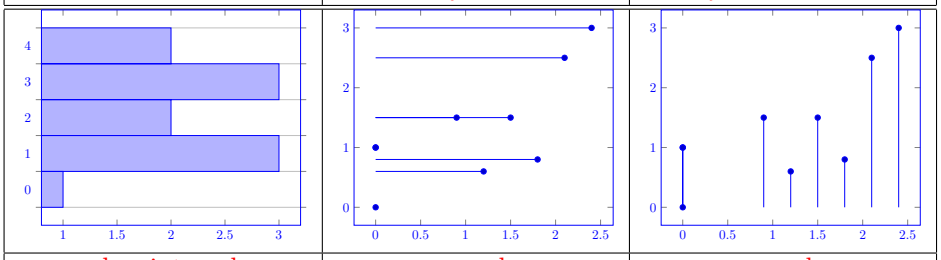
15.1.4 Type de graphiques



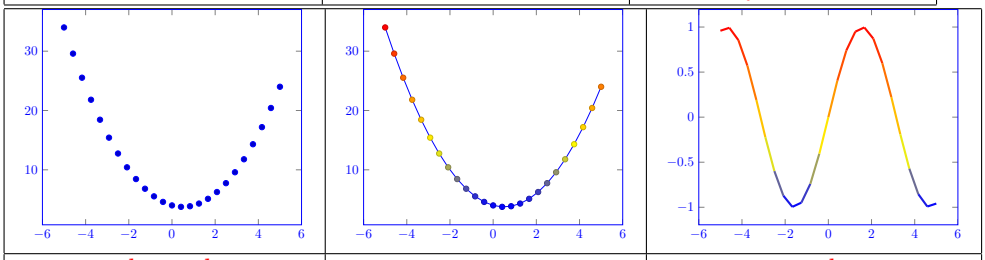
const plot	const plot mark right	const plot mark mid
jump mark left	jump mark right	jump mark mid



xbar | ybar | ybar interval

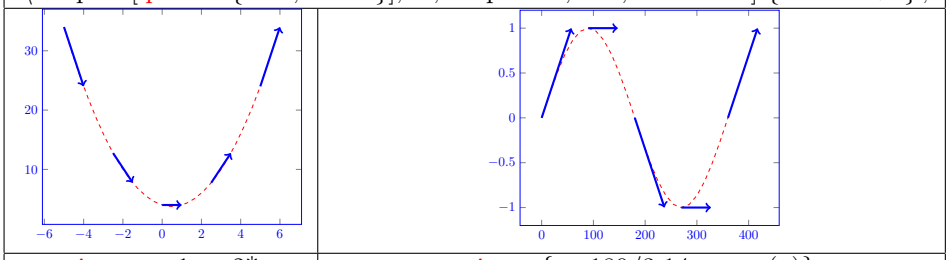


xbar interval | xcomb | ycomb



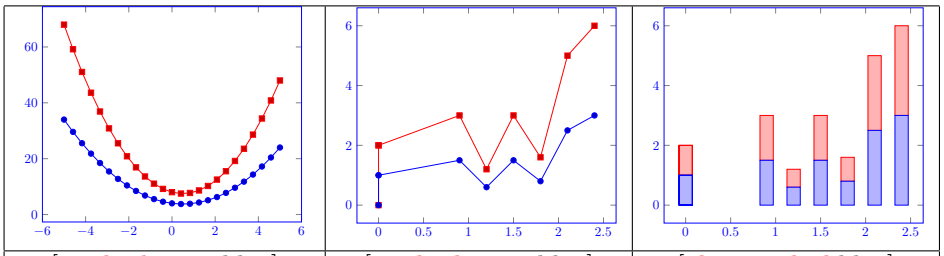
only marks | scatter | mesh

\addplot [quiver={u=1,v=2*x}],->,samples=5,blue,ultra thick] {x^2 - x +4} ;

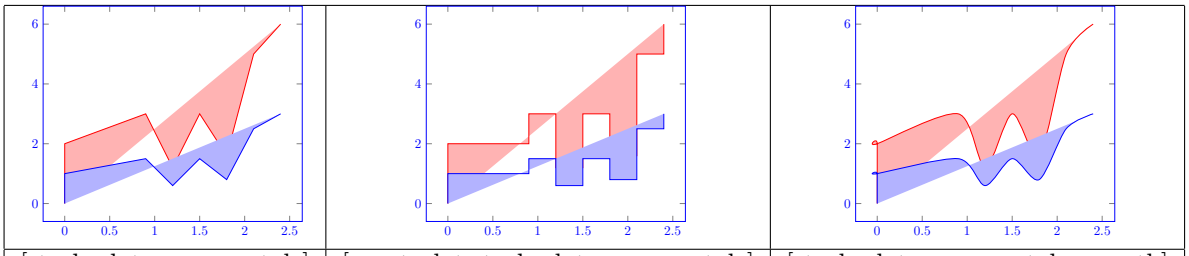


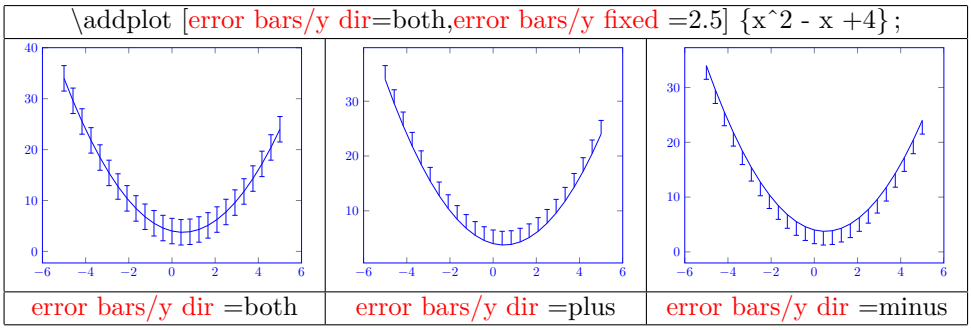
quiver=u=1,v=2*x | quiver={u=180/3.14,v=cos(x)}

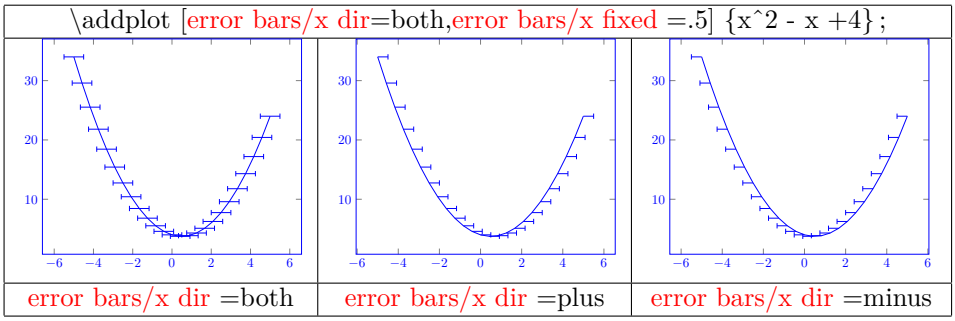
Par défaut : u=0 et v = 0

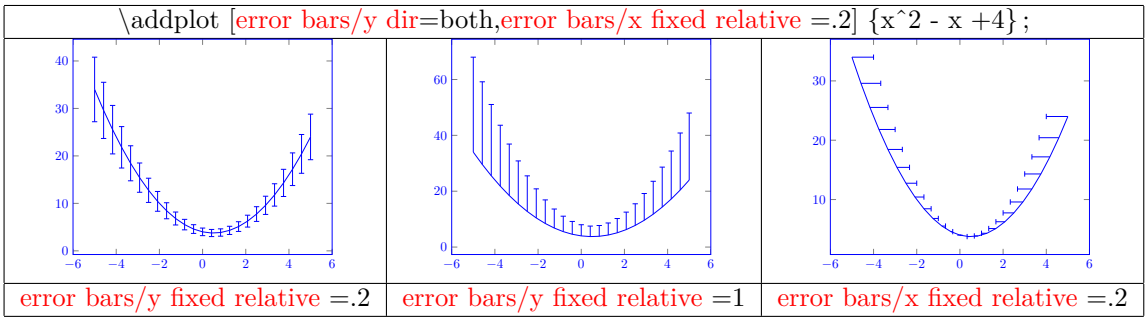


[stack plots=y,blue] | [stack plots=y,blue] | [ybar stacked,blue]



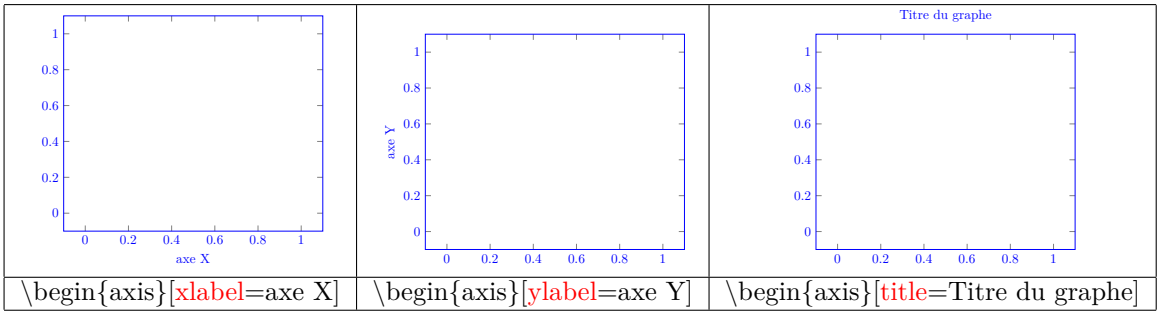




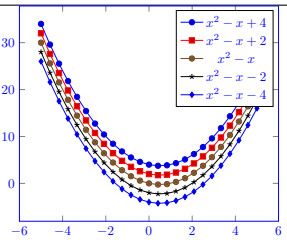


15.2 Habillage du graphe

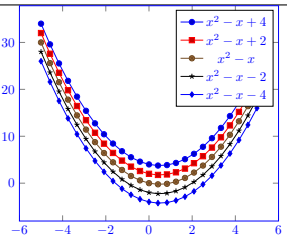
15.2.1 Titres



15.2.2 Légende

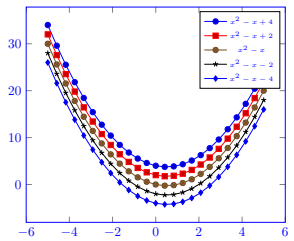


```
\begin{axis}
\addplot {x^2 - x +4};
\addplot {x^2 - x +2};
\addplot {x^2 - x };
\addplot {x^2 - x -2 };
\addplot {x^2 - x -4 };

\legend{$x^2 - x +4$,$x^2 - x +2$,$x^2 - x $,$x^2 - x -2 $,$x^2 - x -4 $}
\end{axis}
```

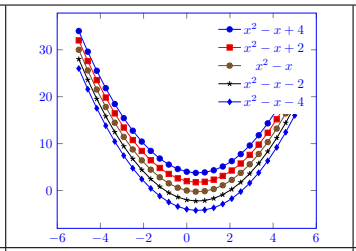


```
\begin{axis}[legend entries= {$ x^2 - x +4 $,$ x^2 - x +2 $,$ x^2 - x $,$ x^2 - x -2 $,$ x^2 - x -4 $} ]

\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}
```

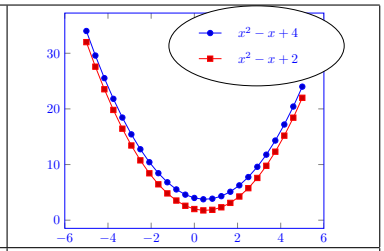
Options



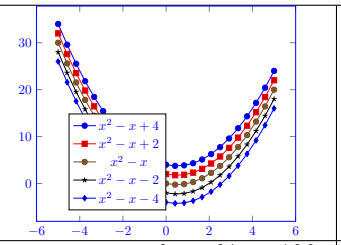
legend style={font=\tiny}



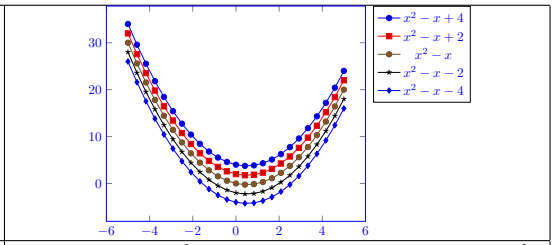
legend style={draw=none}



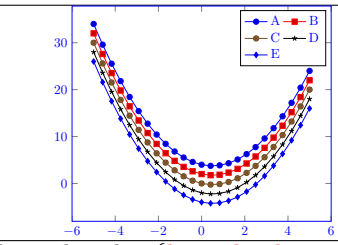
legend style={shape=ellipse}



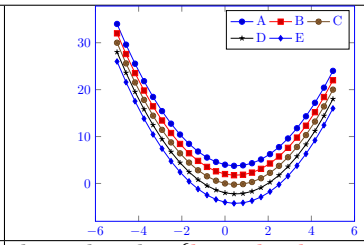
legend style={at={(.5,.5)}}



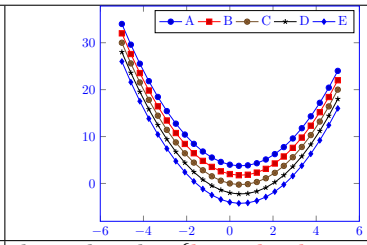
legend style={legend pos=outer north east}



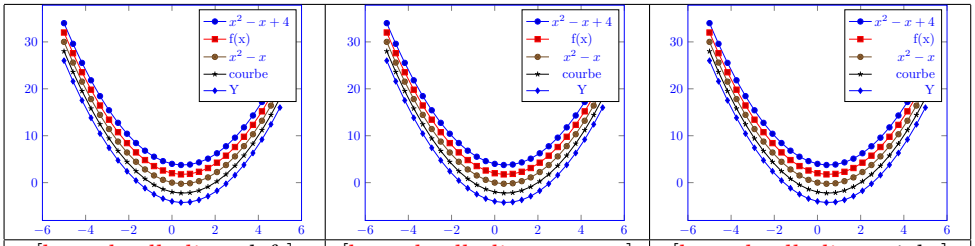
legend style={legend columns=2}



legend style={legend columns=3}

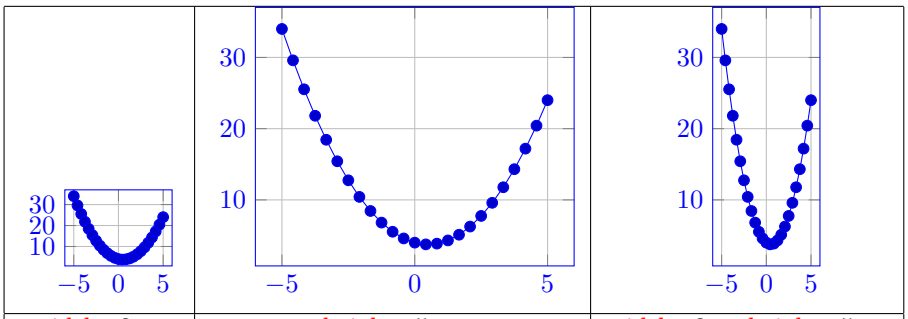


legend style={legend columns=-1}



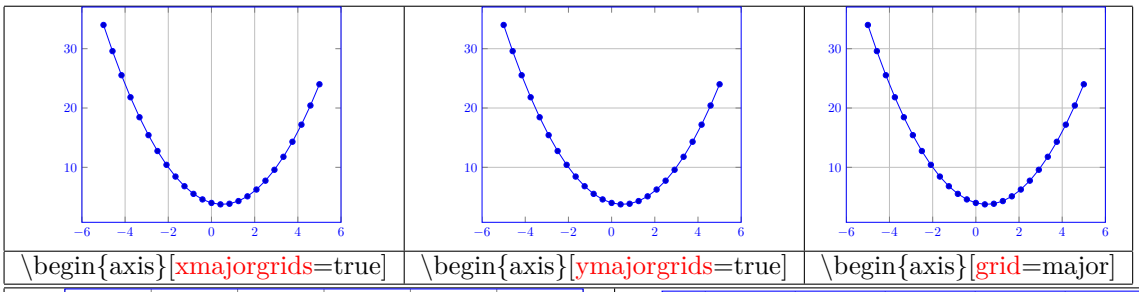
[legend cell align=left] | [legend cell align=center] | [legend cell align=right]

15.2.3 Taille du graphe

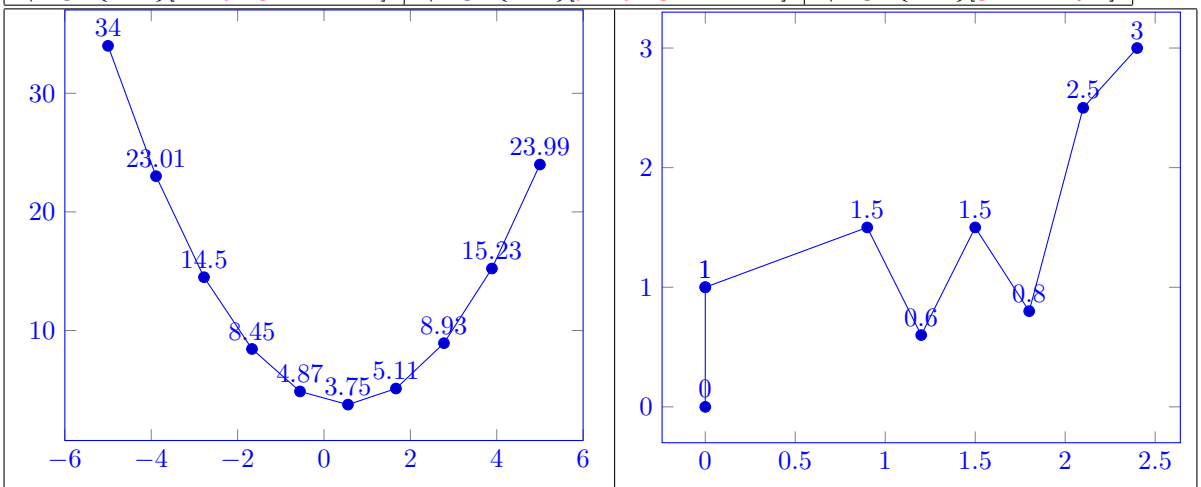


width=3cm | height=5cm | width=3cm,height=5cm

15.2.4 Quadrillage



\begin{axis}[xmajorgrids=true] | \begin{axis}[ymajorgrids=true] | \begin{axis}[grid=major]

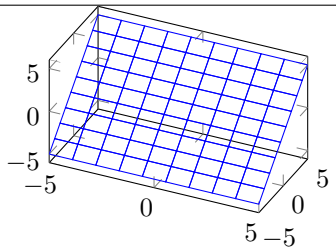


\beginACaxis[nodes near coords,samples=10]
\addplot {x^ 2- x +4} ;

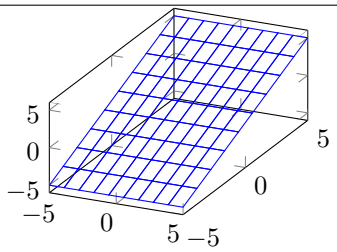
\beginACaxis[nodes near coords]
\addplot file table2.dat ;

15.3 Courbes 3D

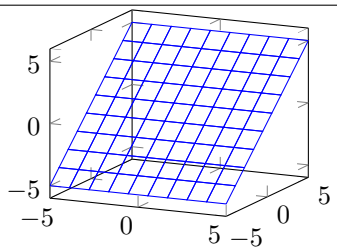
15.3.1 Axes



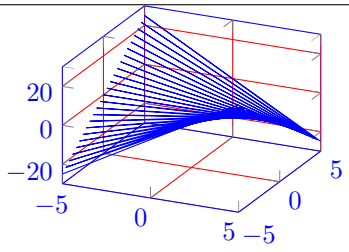
plot box ratio=2 1 1



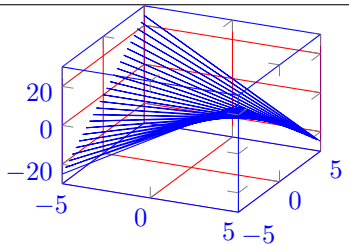
plot box ratio=1 2 1



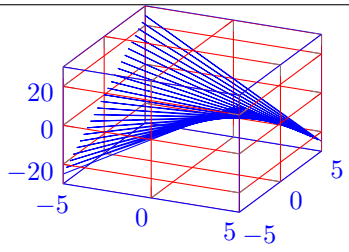
plot box ratio=1 1 2



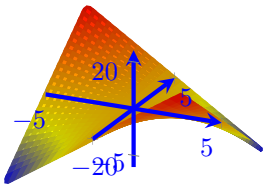
3d box=background (Par défaut)



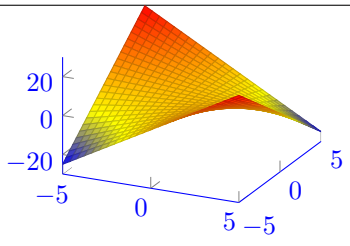
3d box=complete



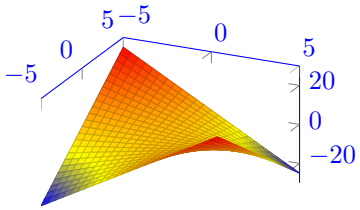
3d box=complete*



axis lines=center,axis on top



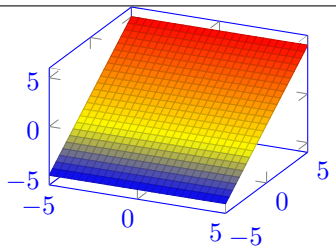
axis lines*=left



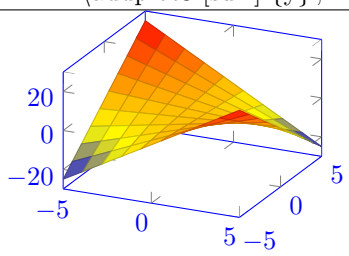
axis lines*=right

15.3.2 Tracé de la courbe

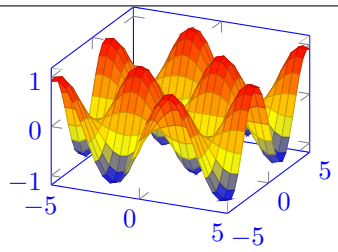
\addplot3 [surf] {y} ;



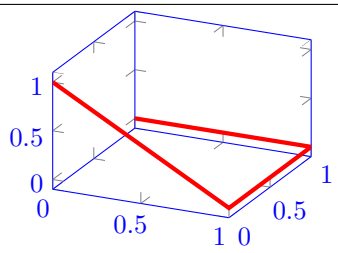
{y}



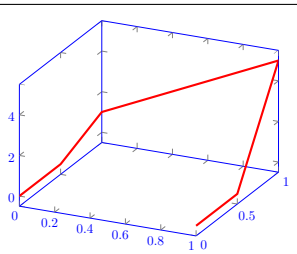
{-x*y}



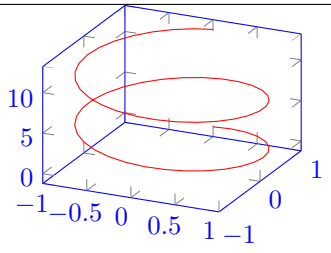
gnuplot[id=sinxy]{sin(x)*sin(y)} ;



coordinates {(0,0,1) (1,0,0) (1,1,0) (0,1,0)} ;



file {table3.dat} ;

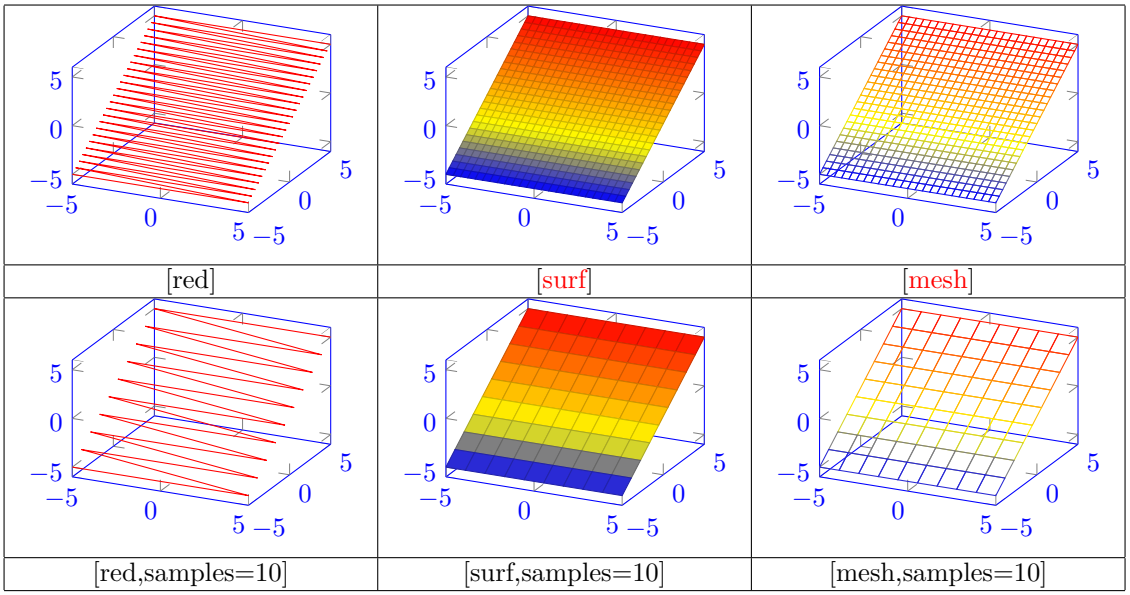


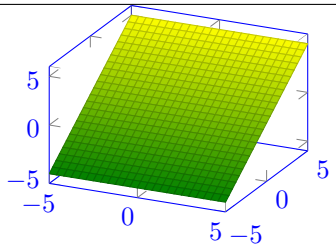
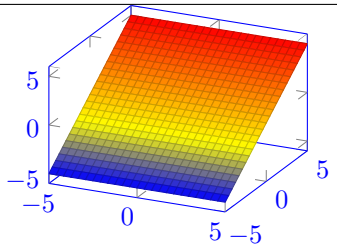
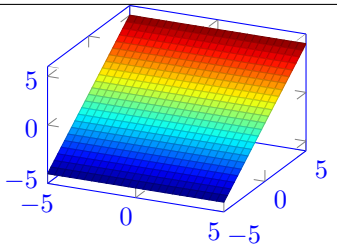
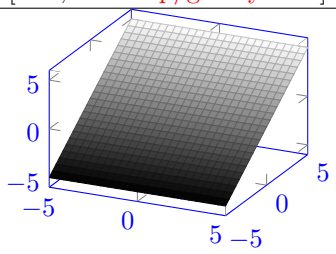
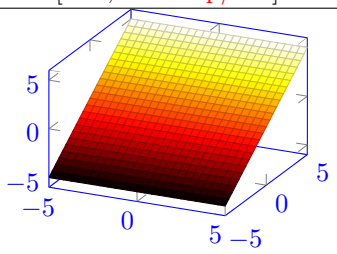
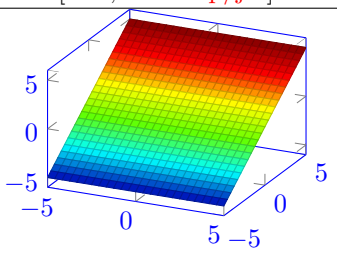
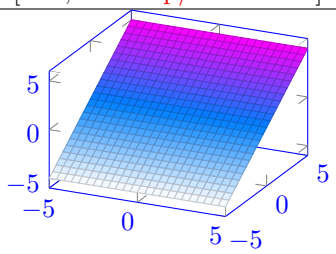
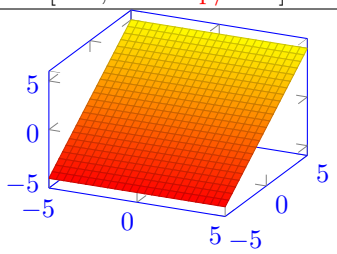
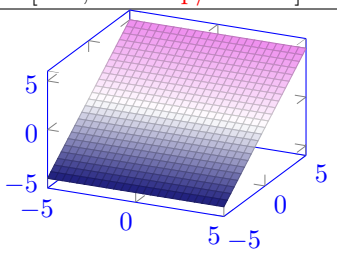
{sin(x)},{cos(x)},{x/60}) ;

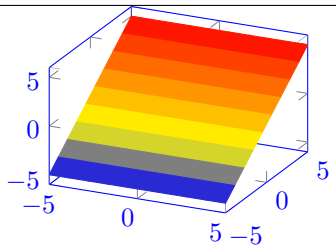
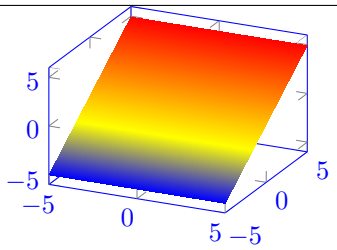
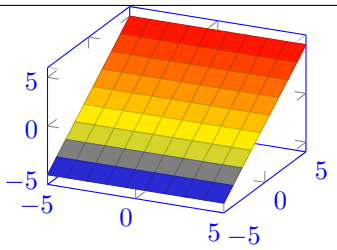
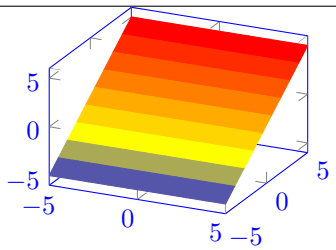
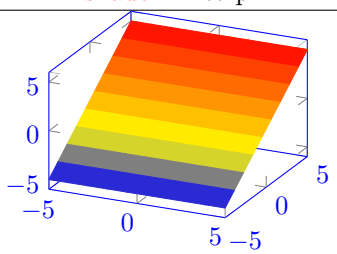
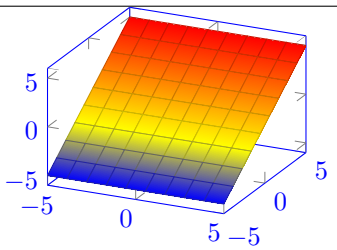
Contenu du fichier table3.dat :

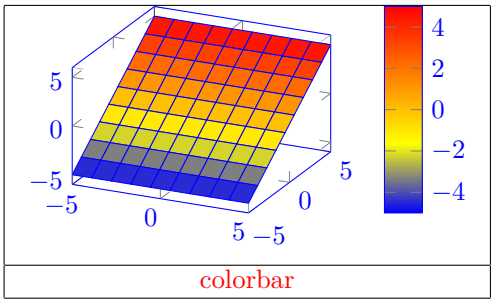
0	0	0
0	.5	0
0	1	1
1	1	5
1	.5	0
1	0	0

15.3.3 Aspect



		
[surf,colormap/greenyellow]	[surf,colormap/hot]	[surf,colormap/jet]
		
[surf,colormap/blackwhite]	[surf,colormap/hot2]	[surf,colormap/bluered]
		
[surf,colormap/cool]	[surf,colormap/redyellow]	[surf,colormap/violet]

		
shader=flat	shader=interp	shader=faceted
		
shader=flat corner	shader=flat mean	shader=faceted interp



colorbar

15.3.4 Point de vue

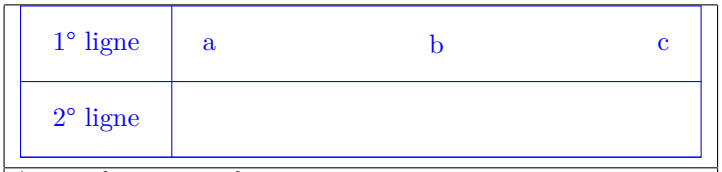
Azimut
view/az= angle de - 50 à +50

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

16 Les Tableaux de variation

Insérer la commande \usepackage{tkz-tab} dans le préambule

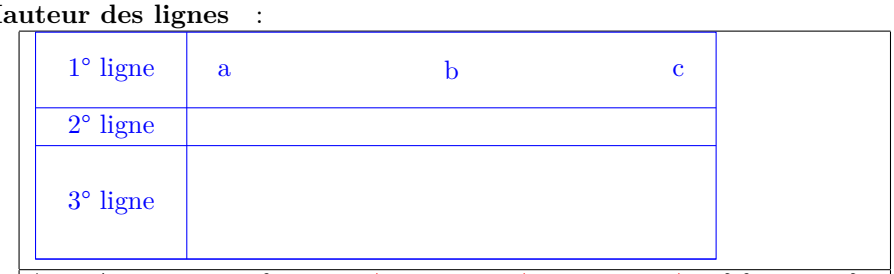
16.1 Déclaration du tableau




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

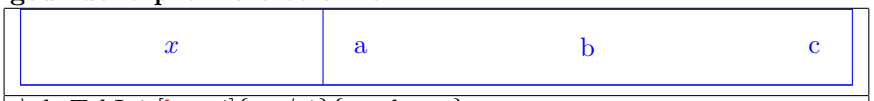
16.1.1 Options

Hauteur des lignes :



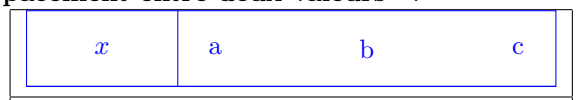

```
\tikz \tkzTabInit{1° ligne /1 , 2° ligne /.5 , 3° ligne /1.5 }{a , b , c } ;
```

Largeur de la première colonne :



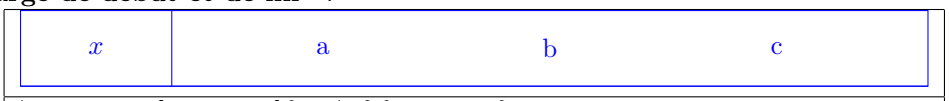

```
\tkzTabInit[lgt=4]{ x / 1}{ a , b , c } ;
Par défaut : lgt==2 cm
```

Espacement entre deux valeurs :




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

Marge de début et de fin :




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

Épaisseur des lignes du tableau :

x	a	b	c

\tkzTabInit[dlw=2pt]{ x / 1}{ a , b , c } ;
Par défaut : lw=0,4 pt

Absence de cadre :

x	a	b	c

\tkzTabInit[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]

1°ligne	a	b
2°ligne		

[color,colorC = cyan]

1°ligne	a	b
2°ligne		

[color,colorL = green]

1°ligne	a	b
2°ligne		

[color,colorV = magenta]

Par défaut : color = false colorT=colorC=colorL=colorV =white

16.2 Création d'une ligne de signes

x	a	b	c
$f(x)$		2	4

\tkzTabLine{ t, 2,t ,4 ,t }

x	a	b	c
$f(x)$	0	2	0	4	0

\tkzTabLine{ z, 2, z ,4 ,z }

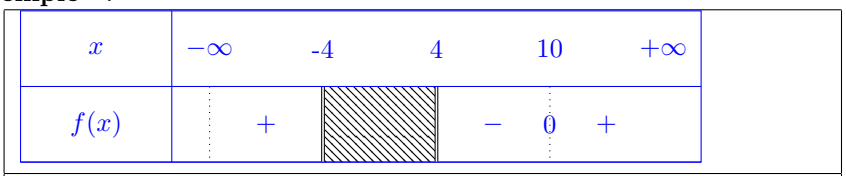
x	a	b	c
$f(x)$		2	4	

\tkzTabLine{ d, 2, d ,4 ,d }

x	a	b	c
$f(x)$	1	3	4	5

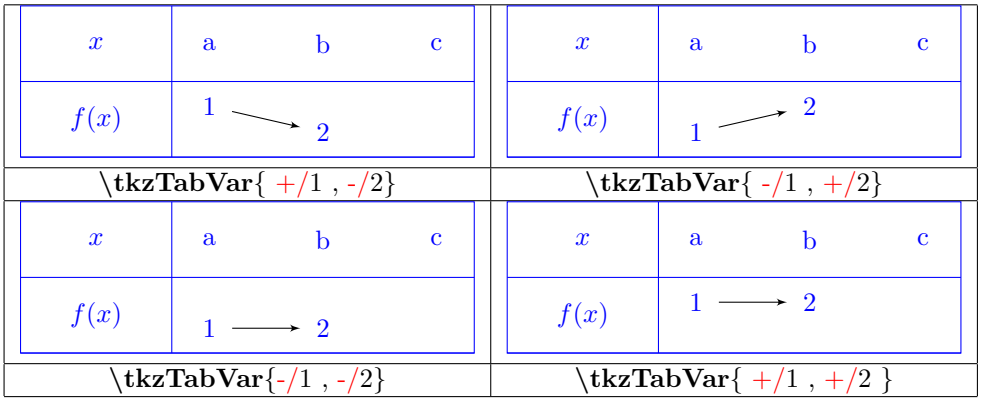
\tkzTabLine{ 1, h, 3 ,4 ,5 }

Exemple :




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

16.3 Création d'une ligne de variations

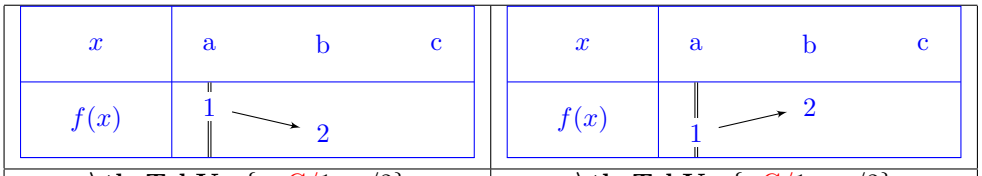


\tkzTabVar{ +/1 , -/2}

\tkzTabVar{ -/1 , +/2}

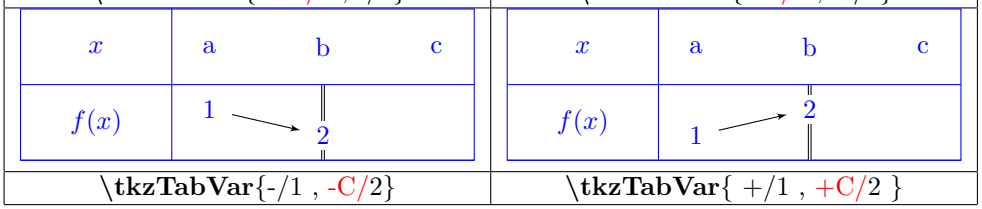
\tkzTabVar{-/1 , -/2}

\tkzTabVar{ +/1 , +/2 }



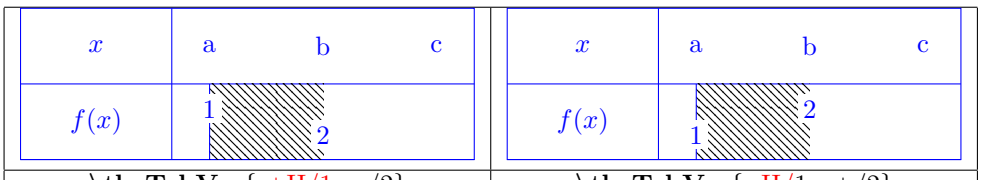
\tkzTabVar{ +C/1 , -/2}

\tkzTabVar{ -C/1 , +/2}



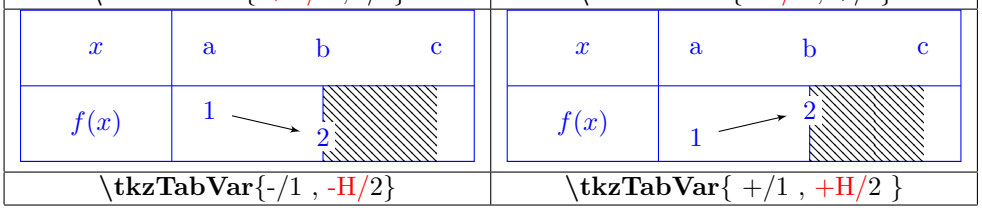
\tkzTabVar{-/1 , -C/2}

\tkzTabVar{ +/1 , +C/2 }



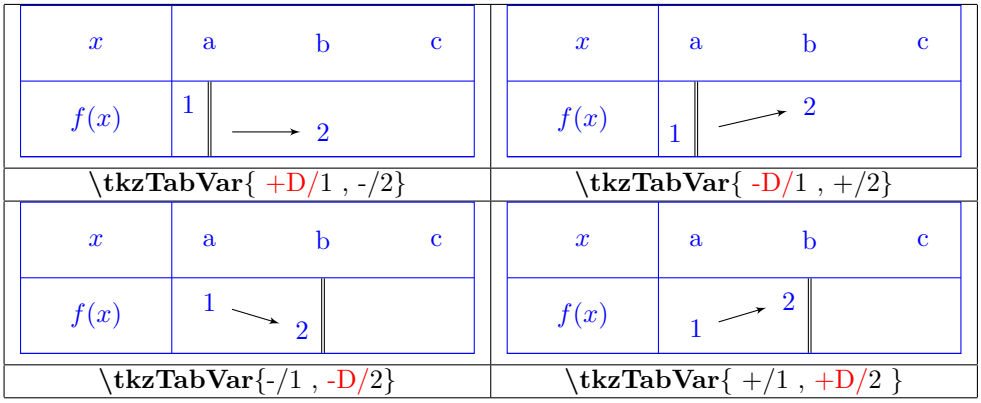
\tkzTabVar{ +H/1 , -/2}

\tkzTabVar{ -H/1 , +/2}



\tkzTabVar{-/1 , -H/2}

\tkzTabVar{ +/1 , +H/2 }

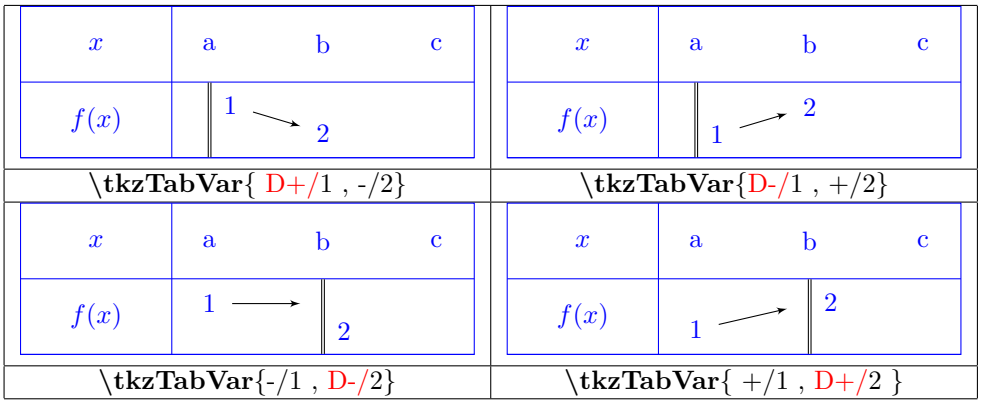


\tkzTabVar{ +D/1 , -/2}

\tkzTabVar{ -D/1 , +/2}

\tkzTabVar{-/1 , -D/2}

\tkzTabVar{ +/1 , +D/2 }

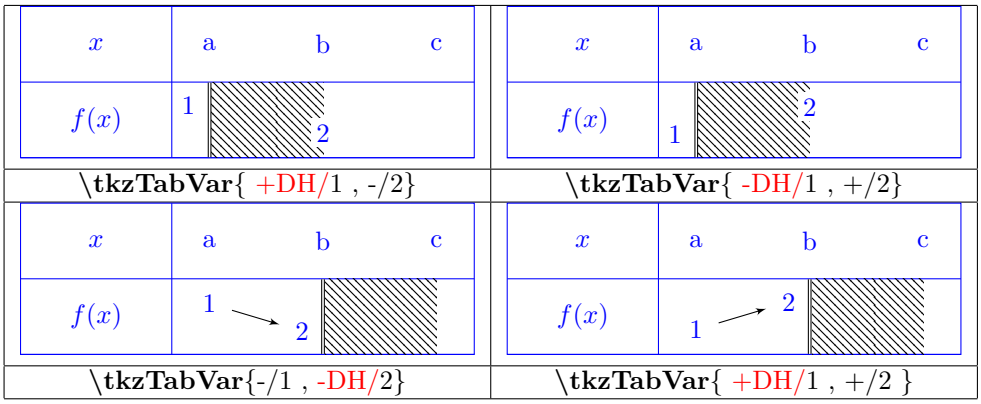


\tkzTabVar{ D+/1 , -/2}

\tkzTabVar{D-/1 , +/2}

\tkzTabVar{-/1 , D-/2}

\tkzTabVar{ +/1 , D+/2 }

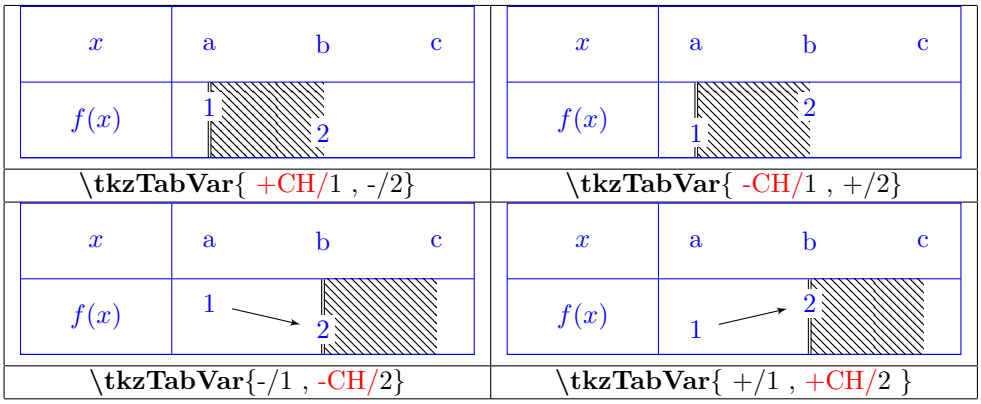


\tkzTabVar{ +DH/1 , -/2}

\tkzTabVar{ -DH/1 , +/2}

\tkzTabVar{-/1 , -DH/2}

\tkzTabVar{ +DH/1 , +/2 }

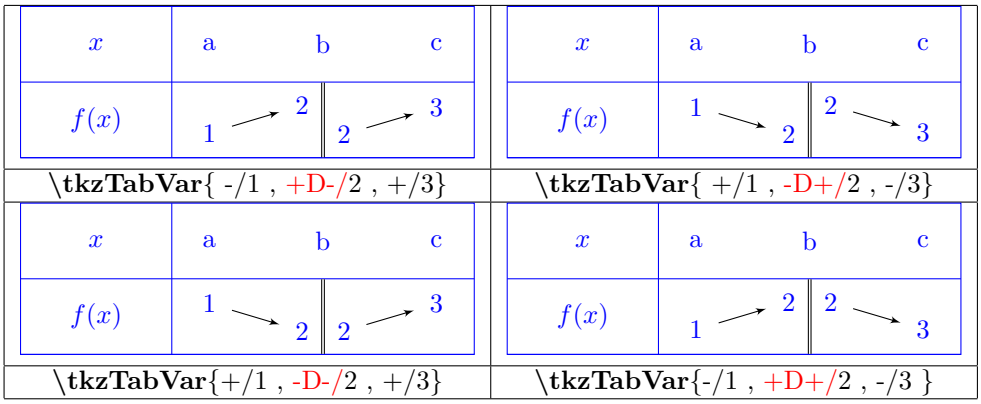


\tkzTabVar{ +CH/1 , -/2}

\tkzTabVar{ -CH/1 , +/2}

\tkzTabVar{-/1 , -CH/2}

\tkzTabVar{ +/1 , +CH/2 }

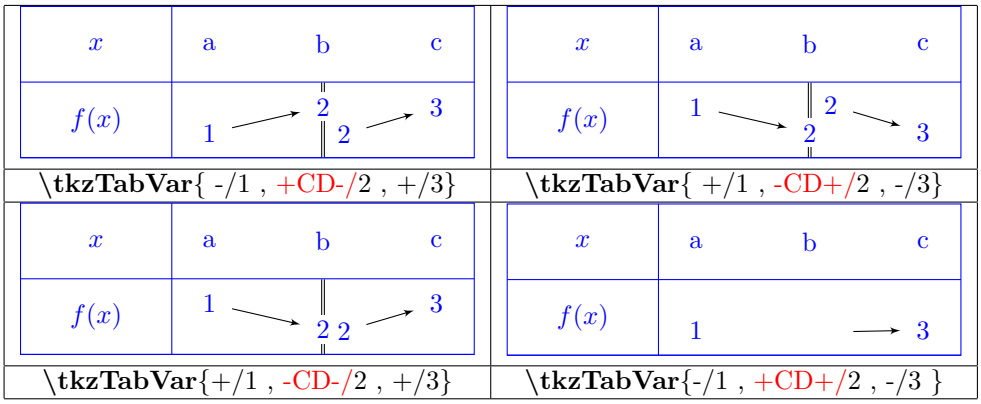


\tkzTabVar{ -/1 , +D-/2 , +/3}

\tkzTabVar{ +/1 , -D+/2 , -/3}

\tkzTabVar{+/1 , -D-/2 , +/3}

\tkzTabVar{-/1 , +D+/2 , -/3 }

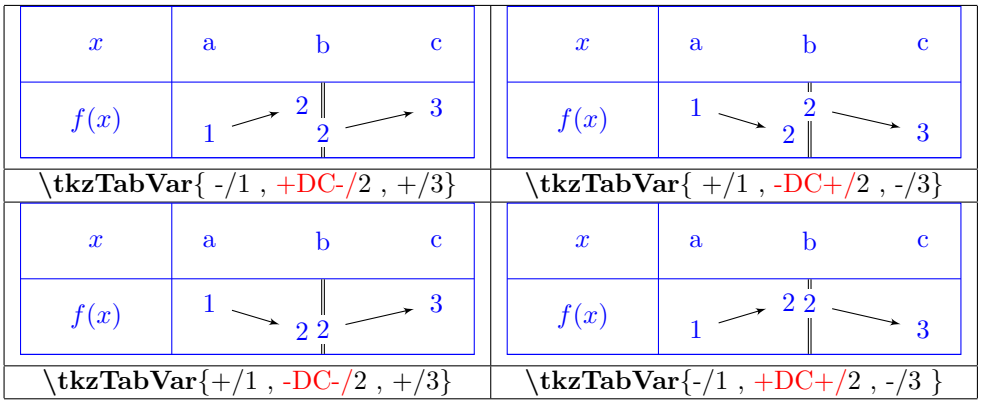


\tkzTabVar{ -/1 , +CD-/2 , +/3}

\tkzTabVar{ +/1 , -CD+/2 , -/3}

\tkzTabVar{+/1 , -CD-/2 , +/3}

\tkzTabVar{-/1 , +CD+/2 , -/3 }

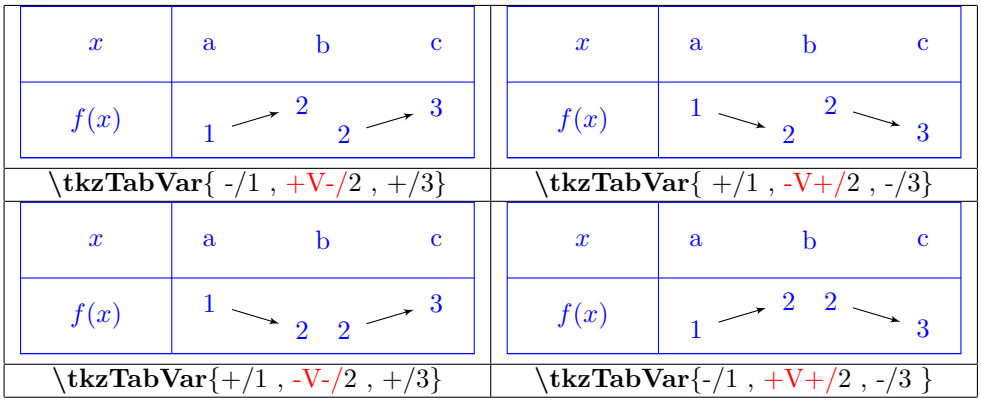


\tkzTabVar{ -/1 , +DC-/2 , +/3}

\tkzTabVar{ +/1 , -DC+/2 , -/3}

\tkzTabVar{+/1 , -DC-/2 , +/3}

\tkzTabVar{-/1 , +DC+/2 , -/3 }



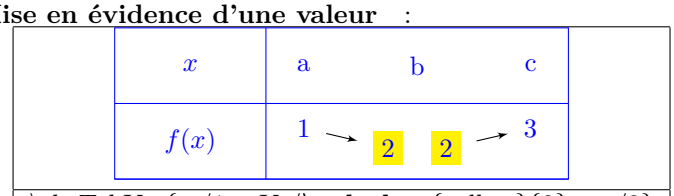
\tkzTabVar{ -/1 , +V-/2 , +/3}

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

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

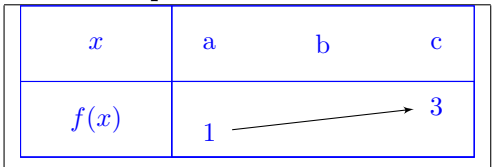
\tkzTabVar{-/1 , +V+/2 , -/3 }

Mise en évidence d'une valeur :



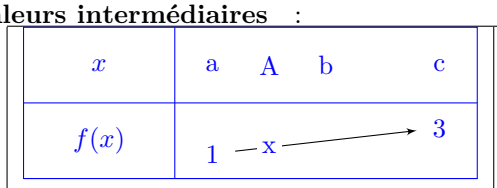
\tkzTabVar{+/1 , -V-/\colorbox{yellow}{2} , +/3}

Variation sur plusieurs colonnes :

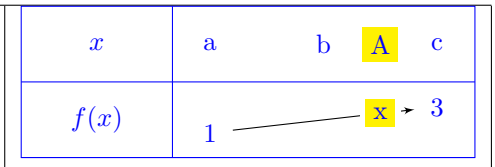


\tkzTabVar{-/1 , R/ , +/3}

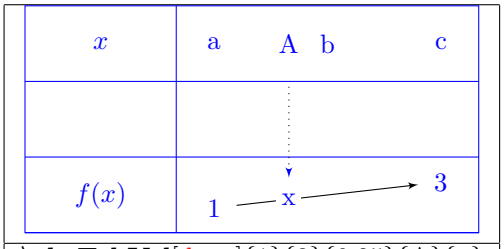
Valeurs intermédiaires :



\tkzTabVal{1}{3}{0.25}{A}{x}

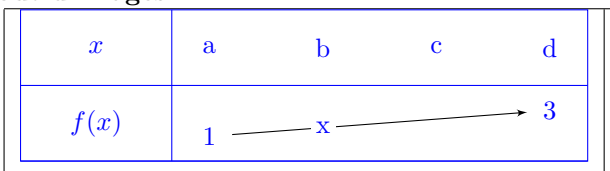


\tkzTabVal{1}{3}{0.75}{A}{x}

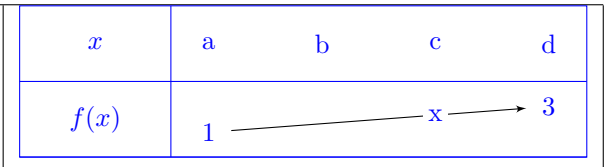


\tkzTabVal[draw]{1}{3}{0.25}{A}{x}

Ajout d'images :



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

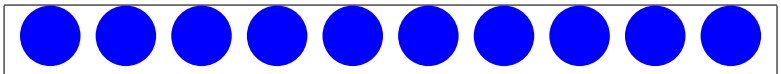


\tkzTabIma{1}{4}{3}{x}

17 Les répétitions

Utilisation du module pgffor chargé automatiquement avec Tikz

17.1 Répétition à 1 variable

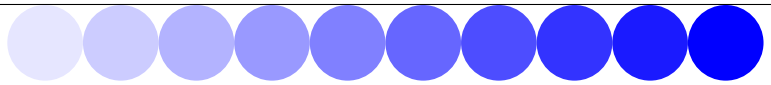


\tikz **\foreach** \x in {1,...,10} \fill[blue](\x,0) circle (0.4cm) ;

Variable \x : position en X

17.2 Répétition à 2 variables

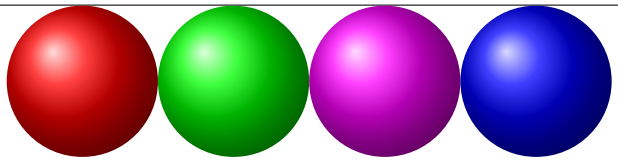
Liste de variables numériques



\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) ;

Variable \pos : position en X Variable \y : couleur

Liste de variables mixtes



\tikz \foreach \x/\col in 1/red,3/green,5/magenta,7/blue \shade[ball color=\col](\x,0) circle (1) ;

Variable \x : position en X Variable \col : couleur

Liste de variables avec un pas

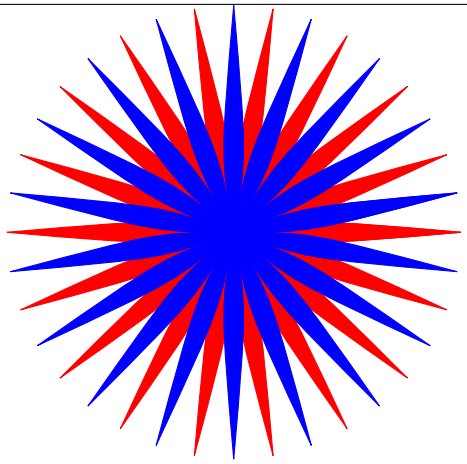
1,3	2,3	3,3	4,3	7,3	8,3	9,3	10,3
1,2	2,2	3,2	4,2	7,2	8,2	9,2	10,2
1,1	2,1	3,1	4,1	7,1	8,1	9,1	10,1

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

Variables numériques avec opération

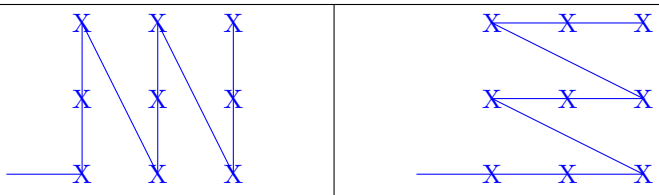


```
\begin{tikzpicture}
\foreach \x in 0,20,...,360{ \filldraw[red] (0,0) .. controls (\x+10 :1) .. (\x :1)
.. controls (\x-10 :1) .. (0,0) ;}
\foreach \x in 10,30,...,370{ \filldraw[blue] (0,0) .. controls (\x+10 :3) ..
(\x :3) .. controls (\x-10 :3) .. (0,0) ;}
\end{tikzpicture}
```

Variable \x : angle

17.3 Répétition à 2 variables - boucles imbriquées

Ordre des boucles imbriquées

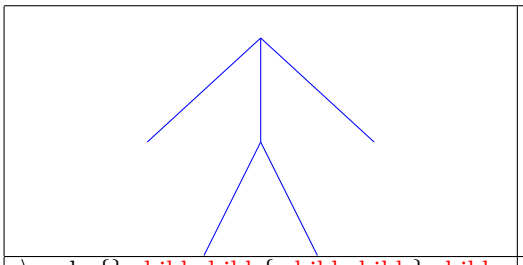


```
\begin{tikzpicture}
\draw (0,0)
\foreach \x in {1,2,3}
\foreach \y in {0,1,2}
{– (\x,\y) node{X}} ;
\end{tikzpicture}
```

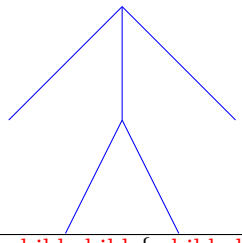
```
\begin{tikzpicture}
\draw (0,0)
\foreach \y in {0,1,2}
\foreach \x in {1,2,3}
{– (\x,\y) node{X}} ;
\end{tikzpicture}
```

18 Les diagrammes arborescents

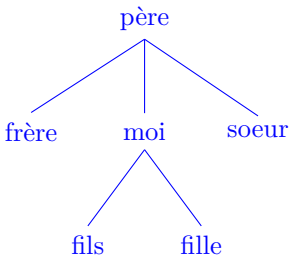
18.1 Structure



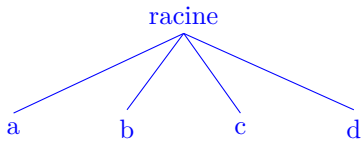
```
\node {} child child { child child } child ;
```



```
\coordinate child child { child child } child ;
```

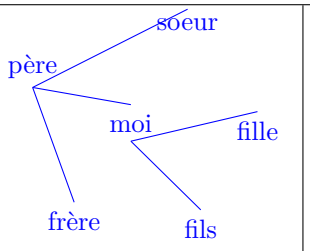



```
\begin{tikzpicture}
\node {père}
child {node {frère}}
child {node {moi}
child {node {fils}}
child {node {fille}}}
child {node{soeur}} ;
\end{tikzpicture}
```

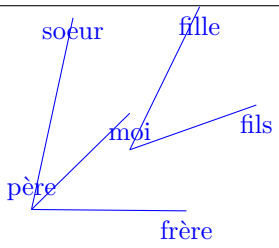



```
\node {racine} child foreach \name in {a,b,c,d} {node {\name}} ;
```

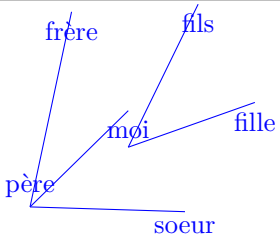
18.2 Orientation



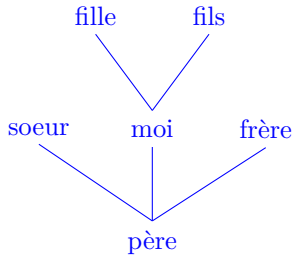

```
\node {père}[grow=-30]
```



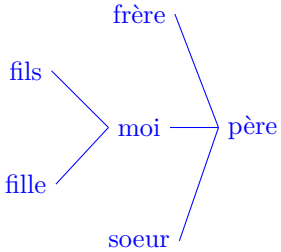

```
\node {père}[grow=30]
```



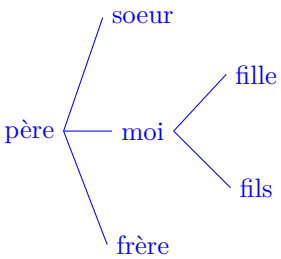

```
\node {père}[grow'=30]
```



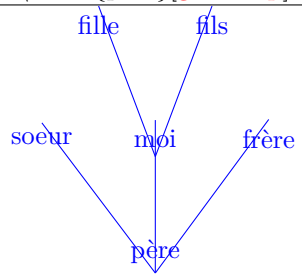
\node {père}[grow=up]



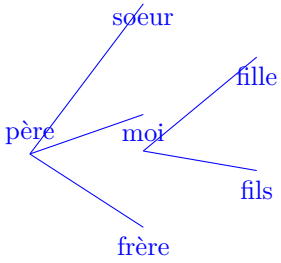
\node {père}[grow=left]



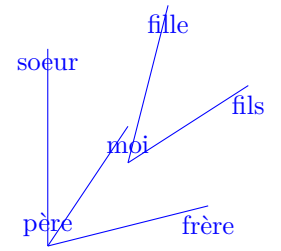
\node {père}[grow=right]



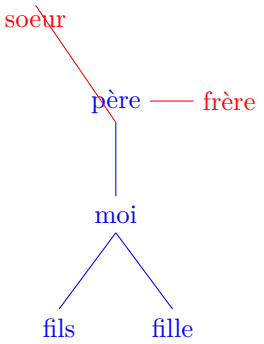
\node {père}[grow=north]



\node {père}[grow=east]



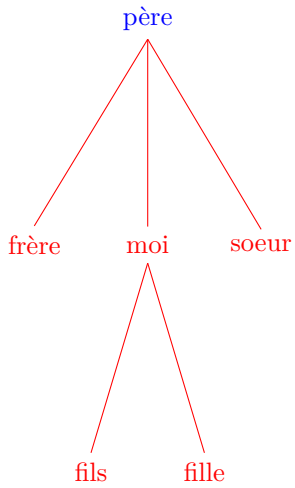
\node {père}[grow=north east]



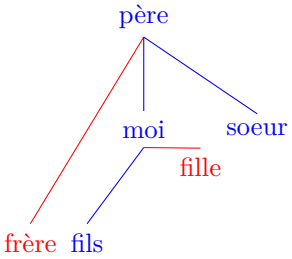

```
\node {père}
child[grow=right,red] {node {frère}}
child {node {moi}
child {node {fils}}
child {node {fille}}}
child[grow=north west,red] {node{soeur}};
```

18.3 Distance

18.3.1 Distance père fils

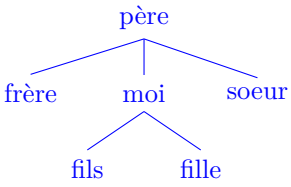


\node {père}[level distance=3cm,red]

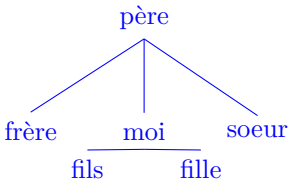


child[level distance=3cm,red] {node {frère}}
child[level distance=.5cm,red] {node {fille}}

Par défaut : level distance=15 mm

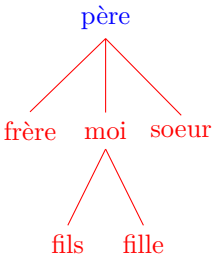


\node {père}[level 1/.style={level distance=1cm}]

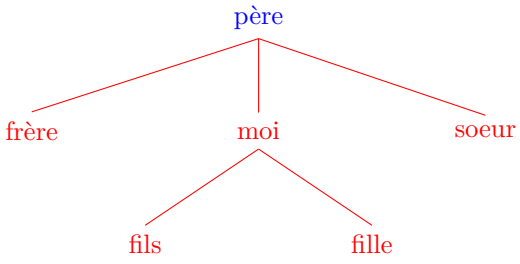


\node {père}[level 2/.style={level distance=.5cm}]

18.3.2 Distance frère soeur

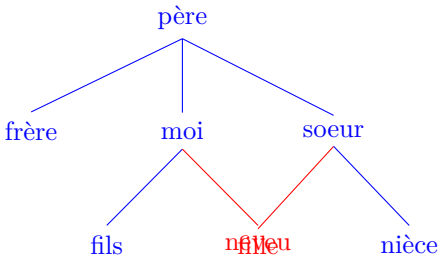
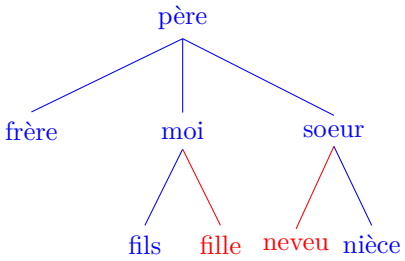


\node {père}[sibling distance=1cm,red]

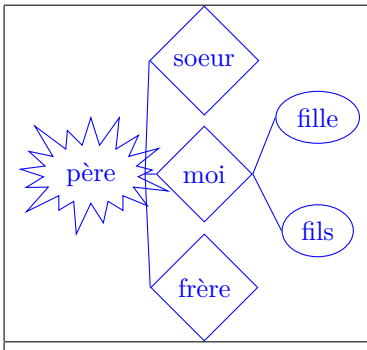


\node {père}[sibling distance=3cm,red]

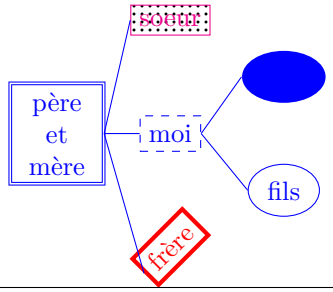
Par défaut : sibling distance=15 mm

Problème	solution
	
[sibling distance=2cm]	[level 1/.style=sibling distance=2cm, level 2/.style=sibling distance=1cm]

18.4 Personnalisation des noeuds

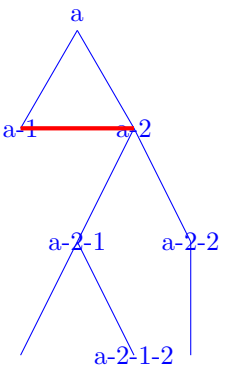



```
\node[starburst [1] ,draw] {père}[grow=right]

child {node[diamond,draw] frère}
child {node[diamond,draw] moi
child {node[ellipse,draw] fils}
child {node[ellipse,draw] fille}}
child {node[diamond,draw] soeur} ;
```

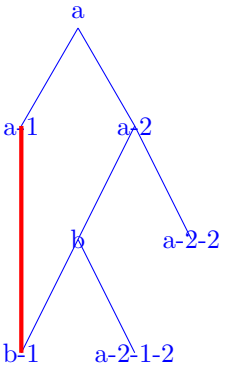



```
\node[rectangle,double,draw,text width=1cm,text centered]
{père}[grow=right,level distance=2cm]

child {node[red,ultra thick,draw,rotate=45] {frère}}
child {node[blue,dashed, draw] {moi}
child {node[ellipse,draw] {fils}}
child {node [ellipse,fill] {fille}}}
child {node [magenta,pattern=dots,draw] {soeur}} ;
```

18.4.1 Nom des noeuds

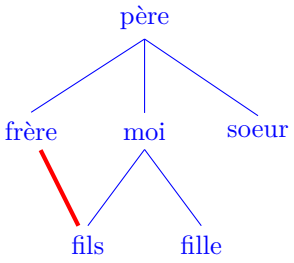



```
\node (a) {a}
child
child {
child {child child}
child {child }
} ;
\node at (a-1) {a-1} ;
\node at (a-2) {a-2} ;
\node at (a-2-2) {a-2-2} ;
\node at (a-2-1) {a-2-1} ;
\node at (a-2-1-2) {a-2-1-2} ;

\draw[red,ultra thick] (a-1) -- (a-2) ;
```



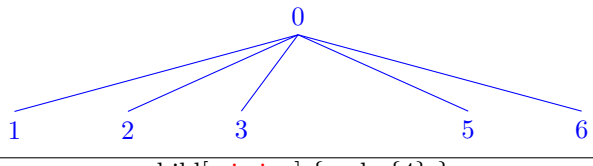

```
\node (a) {a}
child
child
child coordinate (b) child child
child
;
\node at (a-1) {a-1} ;
\node at (a-2) {a-2} ;
\node at (b) {b} ;
\node at (a-2-2) {a-2-2} ;
\node at (b-1) {b-1} ;
\node at (a-2-1-2) {a-2-1-2} ;

\draw[red,ultra thick] (a-1) -- (b-1) ;
```

1. autres types de nœuds voir pages 30 ,32 ,34, etc



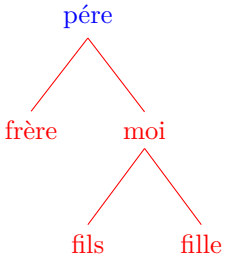

```
\node (a) {père}
child {node (b) {frère}}
child {node (c) {moi}
child {node (d) {fils}}
child {node (e) {fille}}}
child {node (f) {soeur}};

\draw[red,,ultra thick] (b) -- (d);
```

18.4.2 Omission d'un noeud

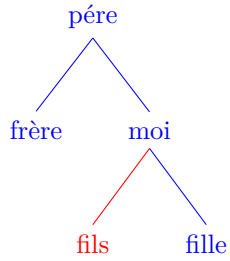



```
child[missing] {node {4} }
```

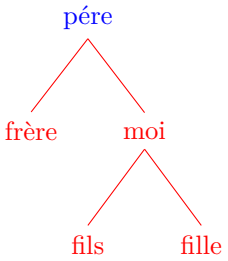
18.4.3 Modification du point d'accrochage



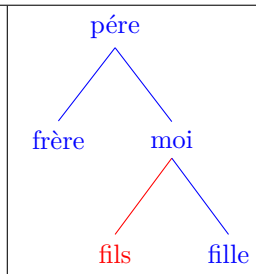

```
\node {pére} [child anchor=east,red]
child {node {frère}}
child { node {moi}
child {node {fils}}
child {node {fils}} };
```




```
\node {pére}
child {node {frère}}
child { node {moi}
child [child anchor=west,red] {node {fils}}
child {node {fils}} };
```

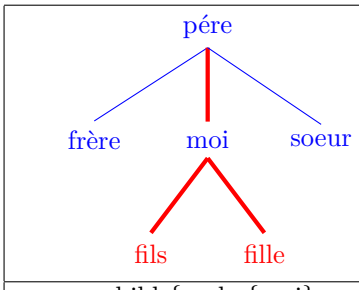



```
\node {pére} [parent anchor=east,red]
child {node {frère}}
child { node {moi}
child {node {fils}}
child {node {fils}} };
```

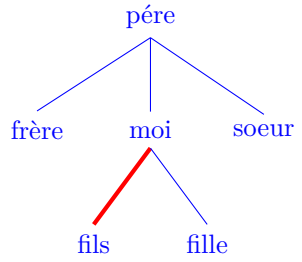



```
\node {pére}
child {node {frère}}
child { node {moi}
child [parent anchor=west,red] {node {fils}}
child {node {fils}} };
```

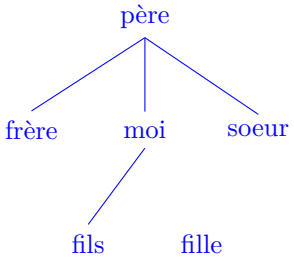
18.5 Liaison



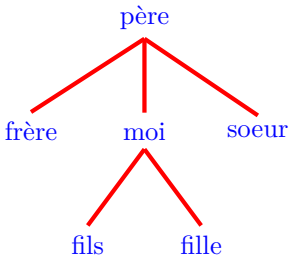
child {node {moi}
edge from parent[red,ultra thick]



child {node {fils}
edge from parent[red,ultra thick] }



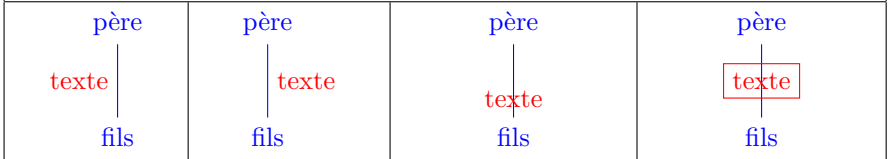
child { node {fille}
edge from parent[draw=none] }



[edge from parent/.style={draw,red,ultra thick}]
\node {père}

18.5.1 Étiquetes sur liaisons

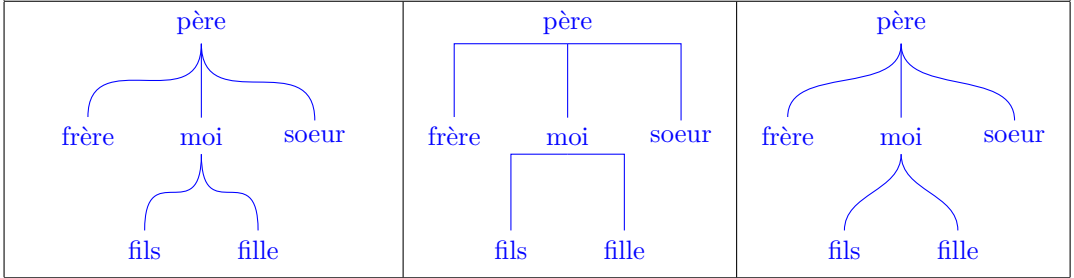
\node {père} child {node {fils} edge from parent node[left,red] {texte}};



node[left,red] | node[right,red] | node[near end,red] | node[draw,red]

18.5.2 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 label

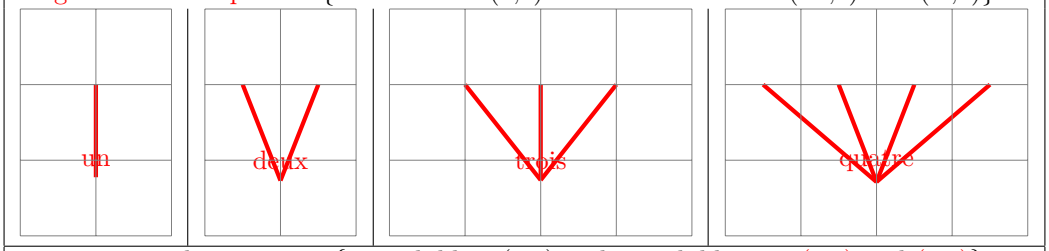
18.6 Options supplémentaires avec « library trees »

Insérer dans le préambule :

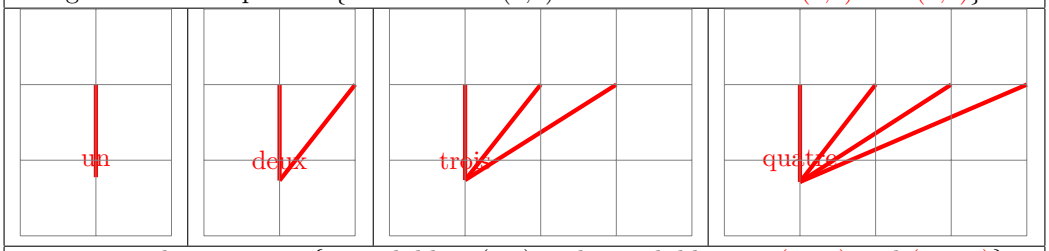
```
\usetikzlibrary{trees}
```

18.6.1 Positions d'un fils et de deux fils

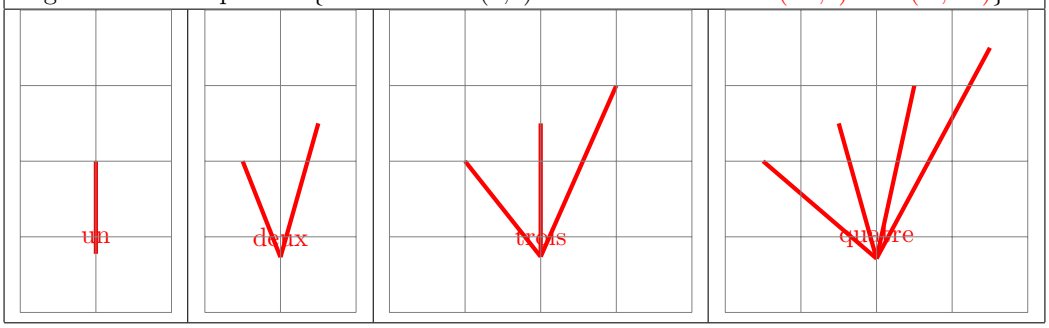
grow via three points={ one child at (0,1) and two children at (-.5,1) and (.5,1)}



grow via three points={ one child at (0,1) and two children at (0,1) and (1,1)}

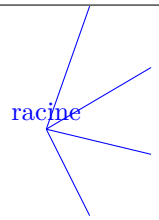


grow via three points={ one child at (0,1) and two children at (-.5,1) and (.5,1.5)}

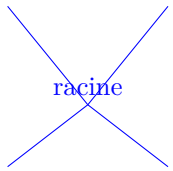


18.6.2 Liaison angulaire

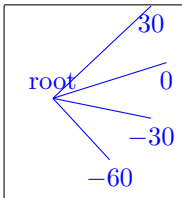
[grow cyclic]



[grow cyclic,sibling angle=45]

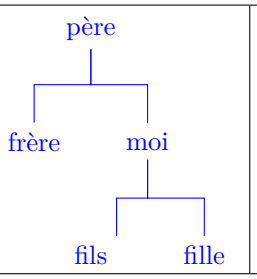


[grow cyclic,sibling angle=90]

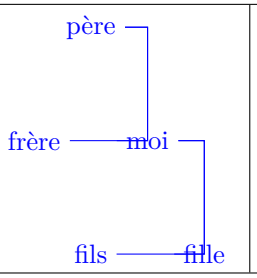



```
\node {racine} [clockwise from=30,sibling angle=30]

child {node {$30$} }
child {node {$0$} }
child {node {$-30$} }
child {node {$-60$ } } ;
```

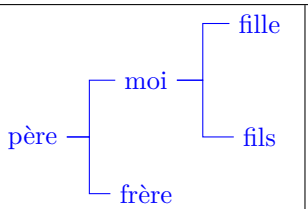
18.6.3 Liaisons en fourchette




```
\node {père} [edge from parent fork down]

child {node {frère}}
child {node {moi}
child [child anchor=north east] {node {fils}}
child {node {fille}}
} ;
```




```
\node {père} [edge from parent fork right]

child {node {frère}}
child {node {moi}
child {node {fils}}
child {node {fille}}
} ;
```




```
\node {père} [edge from parent fork right,grow=right]

child {node {frère}}
child {node {moi}
child {node {fils}}
child {node {fille}}
} ;
```

19 Les animations

Insérer dans le préambule :

```
\usepackage{animate}
```

19.1 Animation à partir de fichiers d'image

première image	seconde et dernière image
	
\includegraphics{XXX1}	\includegraphics{XXX2}

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

19.2 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 ; \endACtikzpicture
% 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}

19.3 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}
```

20 Les modules étudiés dans ce document

module de base tikz : insérer dans le préambule \usepackage{tikz}

Autres modules

nom	voir page	documentation[1]
animate	104	animate.pdf
tkz-tab	88	tkz-tab-screen.pdf

Compléments optionnels :

nom	voir page	A insérer dans le préambule
arrow	9	**\usetikzlibrary**{arrow}
patterns	8	\usetikzlibrary{patterns}
calc	14	\usetikzlibrary{calc}
backgrounds	25	\usetikzlibrary{backgrounds}
decorations.pathmorphing	45	\usetikzlibrary{decorations.pathmorphing}
decorations.pathreplacing	51	\usetikzlibrary{decorations.pathreplacing}
decorations.markings	56	\usetikzlibrary{decorations.markings}
decorations.footprints	59	\usetikzlibrary{decorations.footprints}
decorations.shapes	60	\usetikzlibrary{decorations.shapes}
decorations.text	64	\usetikzlibrary{decorations.text}
decorations.fractals	66	\usetikzlibrary{decorations.fractals}
shapes.geometric	30	\usetikzlibrary{shapes.geometric}
shapes.symbols	32	\usetikzlibrary{shapes.symbols}
shapes.arrows	34	\usetikzlibrary{shapes.arrows}
shapes.callouts	36	\usetikzlibrary{shapes.callouts}
shapes.misc	38	\usetikzlibrary{shapes.misc}
shapes.multipart	40	\usetikzlibrary{shapes.multipart}
plotmarks	77	\usetikzlibrary{plotmarks}

calendar	dans une prochaine mise à jour	\usetikzlibrary{calendar}
automata	dans une prochaine mise à jour	\usetikzlibrary{automata}
backgrounds	dans une prochaine mise à jour	\usetikzlibrary{backgrounds}
chains	dans une prochaine mise à jour	\usetikzlibrary{chains}
circuits.ee	dans une prochaine mise à jour	\usetikzlibrary{circuits.ee}
circuits.logic	dans une prochaine mise à jour	\usetikzlibrary{circuits.logic}
decorations	dans une prochaine mise à jour	\usetikzlibrary{decorations}
er	dans une prochaine mise à jour	\usetikzlibrary{er}
external	dans une prochaine mise à jour	\usetikzlibrary{external}
fadings	dans une prochaine mise à jour	\usetikzlibrary{fadings }
fit	dans une prochaine mise à jour	\usetikzlibrary{fit}
fixedpointarithmetic	dans une prochaine mise à jour	\usetikzlibrary{fixedpointarithmetic}
folding	dans une prochaine mise à jour	\usetikzlibrary{folding}
fpu	dans une prochaine mise à jour	\usetikzlibrary{fpu}
intersections	dans une prochaine mise à jour	\usetikzlibrary{intersections}
lindenmayersystems	dans une prochaine mise à jour	\usetikzlibrary{lindenmayersystem}
matrix	dans une prochaine mise à jour	\usetikzlibrary{matrix}
mindmap	dans une prochaine mise à jour	\usetikzlibrary{mindmap}
petri	dans une prochaine mise à jour	\usetikzlibrary{petri}
plothandlers	dans une prochaine mise à jour	\usetikzlibrary{plothandlers}
positioning	dans une prochaine mise à jour	\usetikzlibrary{positioning }
profiler	dans une prochaine mise à jour	\usetikzlibrary{profiler}
scopes	dans une prochaine mise à jour	\usetikzlibrary{scopes}
shadings	dans une prochaine mise à jour	\usetikzlibrary{shadings}
shadows	dans une prochaine mise à jour	\usetikzlibrary{shadows}
shapes.gates.ee	dans une prochaine mise à jour	\usetikzlibrary{shapes.gates.ee }
shapes.gates.ee.IEC	dans une prochaine mise à jour	\usetikzlibrary{shapes.gates.ee.IEC }
shapes.gates.logic	dans une prochaine mise à jour	\usetikzlibrary{shapes.gates.logic.IEC}
shapes.gates.logic.IEC	dans une prochaine mise à jour	\usetikzlibrary{shapes.gates.logic.IEC}
shapes.gates.logic.US	dans une prochaine mise à jour	\usetikzlibrary{shapes.gates.logic.US}
spy	dans une prochaine mise à jour	\usetikzlibrary{spy}
svg.path	dans une prochaine mise à jour	\usetikzlibrary{svg.path}
through	dans une prochaine mise à jour	\usetikzlibrary{through}
topaths	dans une prochaine mise à jour	\usetikzlibrary{topaths}
trees	dans une prochaine mise à jour	\usetikzlibrary{trees}
turtle	dans une prochaine mise à jour	\usetikzlibrary{turtle}

Références

[1] pgfmanual.pdf version 2.10 726 pages 

[2] pgfplots.pdf version 1.80 439 pages 

[3] tkz-tab-screen.pdf version 1.1c 83 pages