Compléments TikZ

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Compléments Ti*k*Z

Résumé

Ce document reprend de façon très condensée quelques fonctionnalités décrites dans le manuel d'emploi de Ti*k*Z "The Ti*k*Z and PGF Packages – Manual for Version 3.0.1" de l'auteur du package TILL TANTAU datée du 7 août 2015.

Il s'appuie aussi sur le document «Visuel Ti*k*z, Version 0.50», de J.P. CASTELEYN daté du 9 novembre 2013.

De bonnes bases de LaTeX et de Ti*k*Z sont indispensables, ce n'est donc pas un document pour débuter.

1–Diverses techniques

1.1–Insérer un dessin ou de l'espace dans le texte

```
Texte à gauche
\tikz \draw
(0,0) node[anchor=north east,draw] {Node à
    gauche}
rectangle (1,1) node[anchor=west,draw] {Node
     à droite};
Texte à droite
```

Texte à gauche Node à droite Node à gauche Texte à droite

```
Texte à gauche
\begin{tikzpicture}
\draw (1,0) -- (4,1);
\end{tikzpicture}
Texte à droite.
```

Texte à gauche Texte à droite.

```
Texte à gauche
\begin{tikzpicture}
\draw[use as bounding box] (2,0) rectangle
    (3,1);
\draw (1,0) -- (4,1);
\end{tikzpicture}
Texte à droite.
```

Texte à gauche Texte à droite.

```
Texte à gauche
\begin{tikzpicture}
\useasboundingbox (2,0) rectangle (3,1);
\draw (1,0) -- (4,1);
\end{tikzpicture}
Texte à droite.
```

Texte à gauche Texte à droite.

```
Texte à gauche
\begin{tikzpicture}[trim left]
\draw (0,0) circle (.5);
\end{tikzpicture}
Texte à droite.
```

Texte à gauche Texte à droite.

```
Texte à gauche
\begin{tikzpicture}%[trim left]
\draw (0,0) circle (.5);
\end{tikzpicture}
Texte à droite.
```

Texte à gauche Texte à droite.

```
Texte à gauche
\begin{tikzpicture}[trim left, trim right=2
    cm]
\draw (0,0) circle (.5);
\end{tikzpicture}
Texte à droite.
```

Texte à gauche Texte à droite.

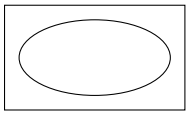
```
Texte à gauche
\begin{tikzpicture}[trim left, trim right=2
    cm, baseline]
\draw (0,0) circle (.5);
\end{tikzpicture}
Texte à droite.
```

Texte à gauche Texte à droite.

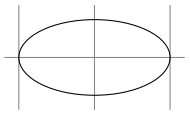
1.2–Faire un cadre

\usetikzlibrary{backgrounds} dans le préambule.

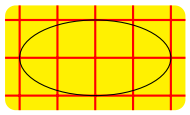
```
\begin{tikzpicture}[show background rectangle]
\draw (0,0) ellipse (1cm and 5mm);
\end{tikzpicture}
```



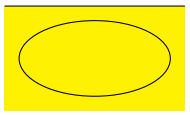
```
\begin{tikzpicture}[show background grid]
\draw (0,0) ellipse (10mm and 5mm);
\end{tikzpicture}
```



```
\tikzset{background grid/.style={thick,draw=red,step=.5
    cm},
background rectangle/.style={rounded corners,fill=
    yellow}}
\begin{tikzpicture}[framed,gridded]
\draw (0,0) ellipse (10mm and 5mm);
\end{tikzpicture}
```

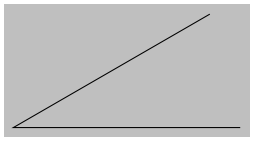


```
\begin{tikzpicture}[
background rectangle/.style={fill=yellow},
framed,show background top]
\draw (0,0) ellipse (10mm and 5mm);
\end{tikzpicture}
```

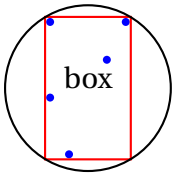


`\usetikzlibrary{fit}` dans le préambule.

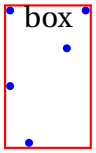
```
\begin{tikzpicture}[scale=3]
\coordinate (A) at (1,0);
\coordinate (B) at (0,0);
\coordinate (C) at (30:1cm);
\draw (A) -- (B) -- (C);
\begin{scope}[on background layer]
\node [fill=lightgray,fit=(A) (B) (C)
] {};
\end{scope}
\end{tikzpicture}
```



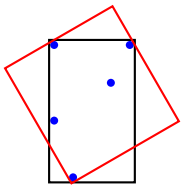
```
\begin{tikzpicture}[inner sep=0pt,thick,
dot/.style={fill=blue,circle,minimum size=3pt}]
\node[dot] (a) at (1,1) {};
\node[dot] (b) at (2,2) {};
\node[dot] (c) at (1,2) {};
\node[dot] (d) at (1.25,0.25) {};
\node[dot] (e) at (1.75,1.5) {};
\node[draw=red,
fit=(a) (b) (c) (d) (e)] {box};
\node[draw,circle,fit=(a) (b) (c) (d) (e)] {};
\end{tikzpicture}
```




```
\begin{tikzpicture}[inner sep=0pt,thick,
dot/.style={fill=blue,circle,minimum size=3pt}]
\node[dot] (a) at (1,1) {};
\node[dot] (b) at (2,2) {};
\node[dot] (c) at (1,2) {};
\node[dot] (d) at (1.25,0.25) {};
\node[dot] (e) at (1.75,1.5) {};
\node[draw=red,fit=(a) (b) (c) (d) (e)] (fit) {};
\node[below] at (fit.north) {box};
\end{tikzpicture}
```




```
\begin{tikzpicture}[inner sep=0pt,thick,
dot/.style={fill=blue,circle,minimum size=3pt}]
\node[dot] (a) at (1,1) {};
\node[dot] (b) at (2,2) {};
\node[dot] (c) at (1,2) {};
\node[dot] (d) at (1.25,0.25) {};
\node[dot] (e) at (1.75,1.5) {};
\node[draw, fit=(a) (b) (c) (d) (e)] {};
\node[draw=red, rotate fit=30, fit=(a) (b) (c) (d) (e)]
    {};
\end{tikzpicture}
```



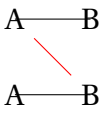
1.3–Déplacer un dessin ou se déplacer dans un dessin

```
\begin{tikzpicture}
\draw(0,0) -- (1,1) -- (1,0);
\draw[rotate=30,xshift=2cm,lightgray]
(0,0) -- (1,1) -- (1,0);
\draw[xshift=2cm,rotate=30,gray]
(0,0) -- (1,1) -- (1,0);
\end{tikzpicture}
```

```
%On déplace le <<crayon>> de 2 cm suivant un angle de 30° puis on
    le descend de 1 cm avant de tirer le trait jusqu'à l'origine:

\tikz\draw[thick](30:2) ++(0,-1) -- (0,0);
```



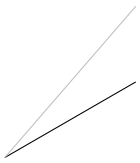
```
\tikz {
\begin{scope}[name prefix = top-]
\node (A) at (0,1) {A};
\node (B) at (1,1) {B};
\draw (A) -- (B);
\end{scope}
\begin{scope}[name prefix = bottom-]
\node (A) at (0,0) {A};
\node (B) at (1,0) {B};
\draw (A) -- (B);
\end{scope}
\draw [red] (top-A) -- (bottom-B);
}
```



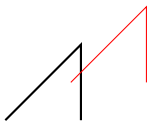

```
\tikz\draw[thick](0,0)--(0,1) [xshift=1mm] (0,0)--(0,1);
```

```
\tikz\foreach \x in {-1,-0.5,1}
\draw[xshift=\x cm] (0,-.5)--(0,.5);
```

```
\begin{tikzpicture}
\draw(1,0) -- +(30:2);
\draw[lightgray] (1,0) -- +([shift=(90:1)] 30:2);
\end{tikzpicture}
```



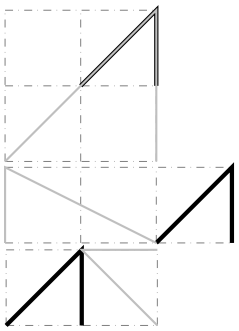
```
\begin{tikzpicture}
\draw[thick](0,0) -- (1,1) -- (1,0);
\draw[shift={(30:1cm)},red] (0,0) -- (1,1) -- (1,0);
\end{tikzpicture}
```



```
\tikz \draw (0,0) -- (1,1) -- ([turn]-45:1cm) -- ([turn]-30:1cm);
```

1.4–Transformations

```
\begin{tikzpicture}
\draw[help lines,dashdotted] (-1,-1) grid (1,1);
\draw [ultra thick](0,0) -- (1,1) -- (1,0);
\draw[scale around={2:(1,1)},lightgray, thick] (0,0) --
     (1,1) -- (1,0);
\end{tikzpicture}

\begin{tikzpicture}
\draw[help lines,dashdotted] (-2,0) grid (1,1);
\draw [ultra thick](0,0) -- (1,1) -- (1,0);
\draw[xscale=-2,lightgray, thick] (0,0) -- (1,1) --
    (1,0);
\end{tikzpicture}

\begin{tikzpicture}
\draw[help lines,dashdotted] (0,0) grid (2,1);
\draw [ultra thick](0,0) -- (1,1) -- (1,0);
\draw[rotate around={90:(1,1)},lightgray, thick] (0,0)
    -- (1,1) -- (1,0);
\end{tikzpicture}
```

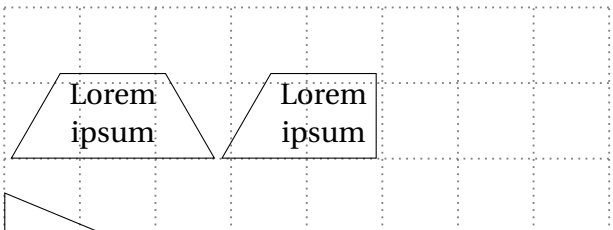


2–Différentes formes de `node`

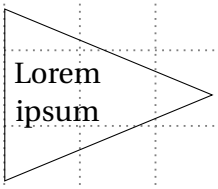
2.1–Bibliothèque `shapes.geometric`

`\usetikzlibrary{shapes.geometric}` dans le préambule.

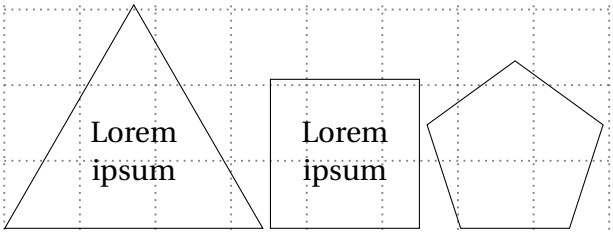
```
\tikz\node[trapezium, draw, align=center]{Lorem\\ ipsum};

\tikz\node[trapezium, draw, trapezium left angle=60, trapezium
    right angle=90, align=center]{Lorem\\ ipsum};
```



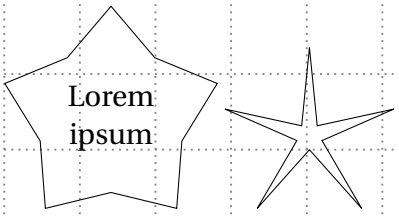

```
\tikz\node[isosceles triangle, draw , align=center]{Lorem\\ ipsum
    };
```



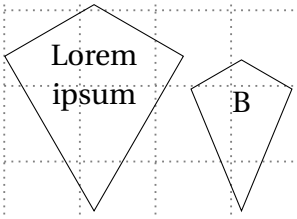

```
\tikz\node[regular polygon, regular polygon sides=3, draw, align=
    center]{Lorem\\ ipsum};

\tikz\node[regular polygon, regular polygon sides=4, draw, align=
    center]{Lorem\\ ipsum};

\tikz\node[regular polygon, regular polygon sides=5, draw, inner
    sep=7mm]{};
```



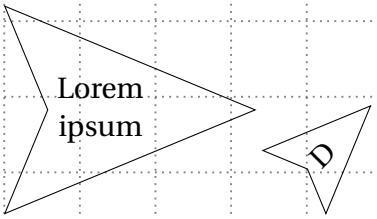

```
\tikz\node[star, draw, align=center]{Lorem\\ ipsum};

\tikz\node[star, star point height=1cm, minimum size=2cm,draw]{};
```



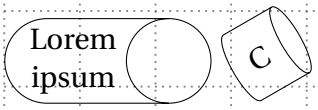

```
\tikz\node[kite, draw, align=center]{Lorem\\ ipsum};

\tikz\node[kite, draw,kite vertex angles=120 and 45, minimum
    height=2cm]{B};
```



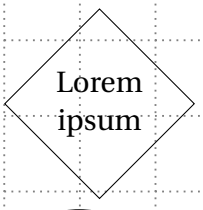

```
\tikz\node[dart, draw, align=center]{Lorem\\ ipsum};

\tikz\node[dart, draw, rotate=45]{D};
```



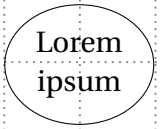

```
\tikz\node[cylinder, draw, align=center]{Lorem\\ ipsum};

\tikz\node [cylinder,rotate=30, draw,minimum height=1cm, minimum
    width=1cm,aspect=0.5]{C};
```



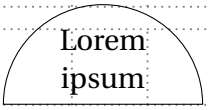

```
\tikz\node[diamond, draw, align=center]{Lorem\\ ipsum};
```



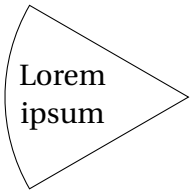

```
\tikz\node[ ellipse, draw, align=center]{Lorem\\ ipsum};
```




```
\tikz\node[semicircle, draw, align=center]{Lorem\\ ipsum};
```



```
\tikz\node[circular sector, draw, align=center]{Lorem\\ ipsum};
```



2.2–Bibliothèque `shapes.symbols`

`\usetikzlibrary{shapes.symbols}` dans le préambule.

```
\tikz\node[cloud, draw, align=center]{Lorem\\ ipsum};

\tikz\node [cloud, cloud puffs=11, draw,aspect=2]  {C};
```

```
\tikz\node[starburst,draw, align=center]{Lorem\\ ipsum};
```

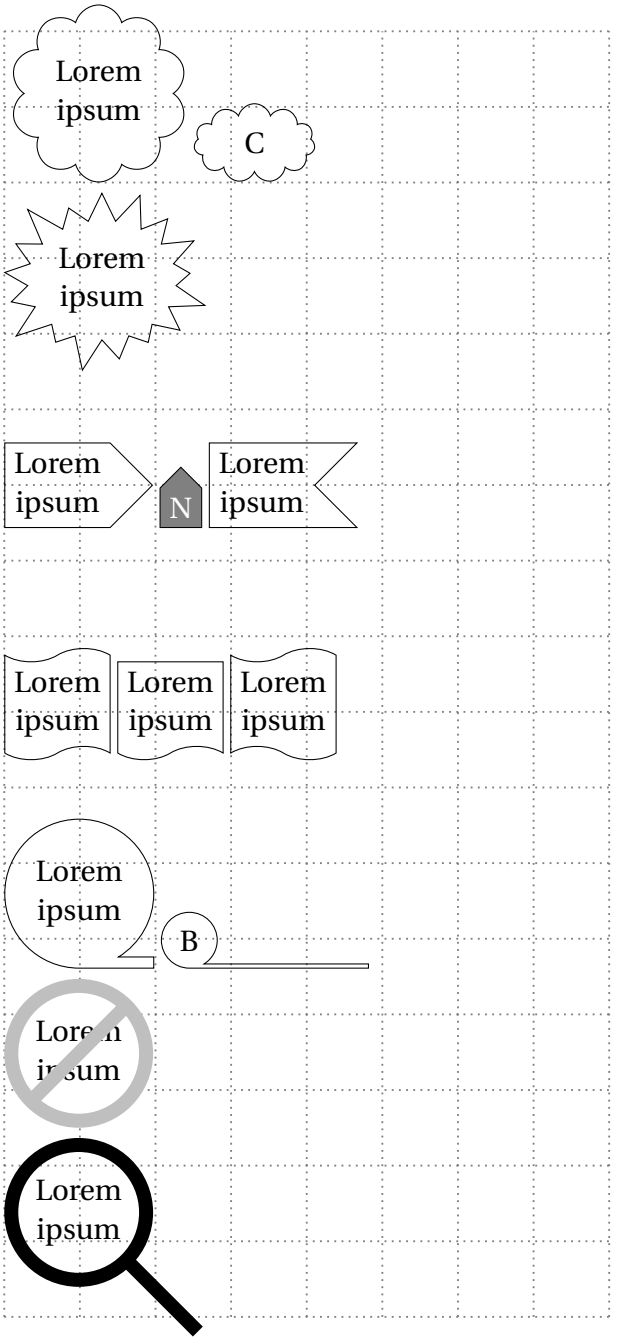
```
\tikz\node[signal, draw, align=center]{Lorem\\ ipsum};

\tikz\node[signal, draw, text=white, fill=gray, signal to=north]
    {N};

\tikz\node[signal, draw,signal from=east, signal to=nowhere, align
    =center]{Lorem\\ ipsum};
```

```
\tikz\node[tape, draw, align=center]{Lorem\\ ipsum};

\tikz\node[tape, draw, tape bend top=none, align=center]{Lorem\\
    ipsum};

\tikz\node [tape, draw,tape bend bottom=out and in, align=center]{
    Lorem\\ ipsum};
```

```
\tikz\node [magnetic tape, draw, align=center]{Lorem\\ ipsum};

\tikz\node [magnetic tape, draw,magnetic tape tail extend=2cm]{B};
```

```
\tikz\node [forbidden sign,line width=1ex,draw=lightgray,fill=
    white, align=center]{Lorem\\ ipsum};
```

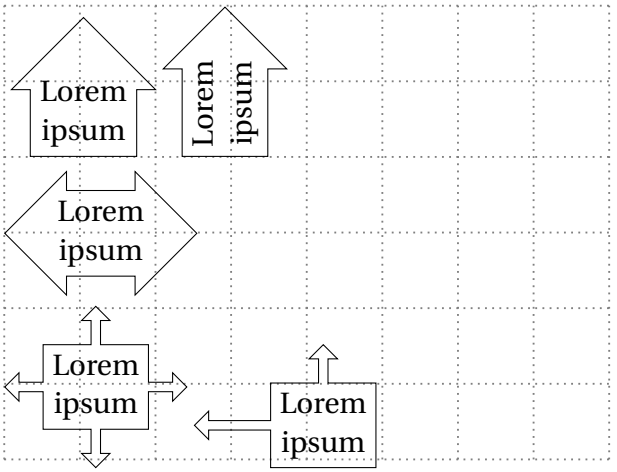
```
\tikz\node [magnifying glass,line width=1ex,draw, align=center]{
    Lorem\\ ipsum};
```



2.3–Bibliothèque `shapes.arrows`

`\usetikzlibrary{shapes.arrows}` dans le préambule.

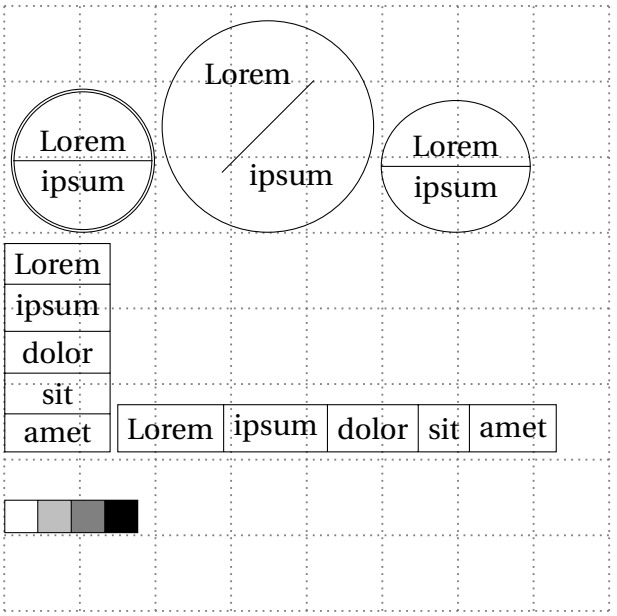
```
\tikz\node [single arrow, draw,shape border rotate=90, align=
    center]{Lorem\\ ipsum};

\tikz\node [single arrow, draw, rotate=90, align=center]{Lorem\\
    ipsum};



\tikz\node [double arrow, draw, align=center]{Lorem\\ ipsum};



\tikz\node[arrow box, draw, align=center]{Lorem\\ ipsum};

\tikz\node[arrow box, draw, arrow box arrows={north:.5cm, west:1cm
    }, align=center]{Lorem\\ ipsum};
```



2.4–Bibliothèque `shapes.multipart`

`\usetikzlibrary{shapes.multipart}` dans le préambule.

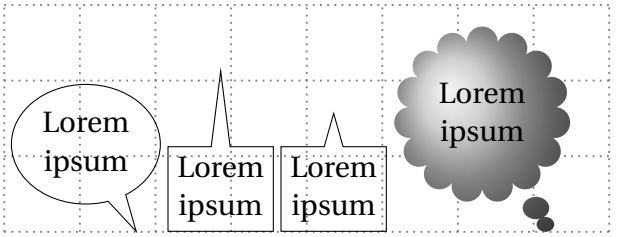
```
\tikz\node[circle split,draw,double]{Lorem \nodepart{lower} ipsum
    };

\tikz\node[circle solidus,draw]{Lorem \nodepart{lower} ipsum};

\tikz\node[ellipse split,draw]{Lorem \nodepart{lower} ipsum};



\tikz\node[rectangle split, rectangle split parts=5, draw, anchor=
    center]{Lorem\nodepart{two}ipsum\nodepart{three}dolor\nodepart{
    four}sit\nodepart{five}amet};

\tikz\node [rectangle split, rectangle split parts=5, draw, anchor
    =center, rectangle split horizontal]{Lorem\nodepart{two}ipsum\
    nodepart{three}dolor\nodepart{four}sit\nodepart{five}amet};


\tikz\node[rectangle split, draw,rectangle split parts=4, minimum
    width=.5cm,rectangle split part fill={white,lightgray,gray,
    black}, rectangle split horizontal]{};
```



2.5–Bibliothèque `shapes.callouts`

`\usetikzlibrary{shapes.callouts}` dans le préambule.

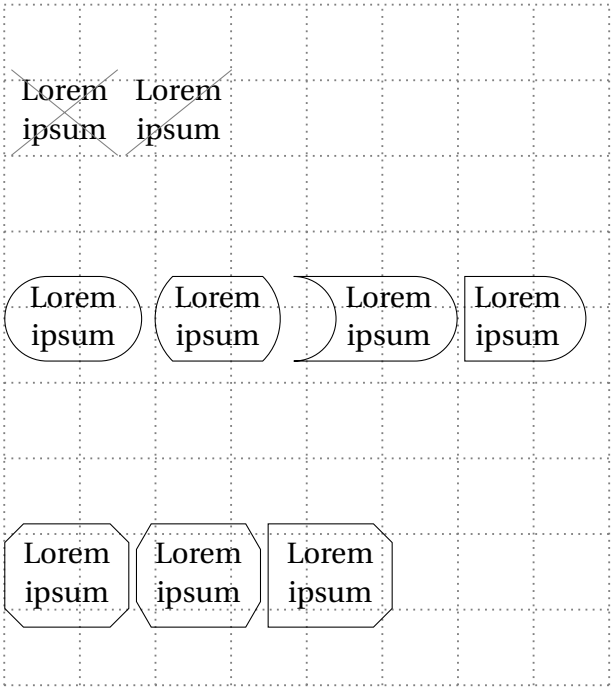
```
\tikz\node[ellipse callout, draw, align=center]{Lorem\\ ipsum};

\tikz\node[rectangle callout, callout relative pointer={(0,1)},
    draw,align=center]{Lorem\\ ipsum};

\tikz\node[rectangle callout, callout absolute pointer={(0,1)},
    draw, align=center]{Lorem\\ ipsum};

\tikz\node[cloud callout, cloud puffs=15, aspect=1, cloud puff arc
    =180,shading=ball,ball color=lightgray,align=center]{Lorem\\
    ipsum};
```



2.6–Bibliothèque `shapes.misc`

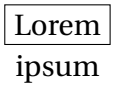
`\usetikzlibrary{shapes.misc}` dans le préambule.

```
\tikz\node[cross out,draw=gray,align=center]{Lorem\\ ipsum};

\tikz\node[strike out,draw=gray,align=center]{Lorem\\ ipsum};


\tikz\node[rounded rectangle, draw,align=center]{Lorem\\ ipsum};

\tikz\node[rounded rectangle, rounded rectangle arc length=90,
    draw,align=center]{Lorem\\ ipsum};

\tikz\node[rounded rectangle, rounded rectangle west arc=concave,
    draw,align=center]{Lorem\\ ipsum};

\tikz\node[rounded rectangle, rounded rectangle left arc=none,
    draw,align=center]{Lorem\\ ipsum};


\tikz\node[chamfered rectangle,draw,align=center]{Lorem\\ ipsum};

\tikz\node[chamfered rectangle,chamfered rectangle angle=30,draw,
    align=center]{Lorem\\ ipsum};

\tikz\node[chamfered rectangle,chamfered rectangle corners={north
    east, south east},draw,align=center]{Lorem\\ ipsum};
```

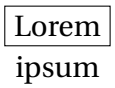


3–Options de `node` :`label` et `pin`

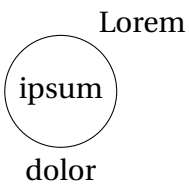
```
\begin{tikzpicture}
\node[draw](C){Lorem};
\node[below] at (C.south){ipsum};
\end{tikzpicture}
```



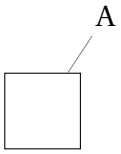

```
\tikz\node[draw,label=below:ipsum]{Lorem};
```



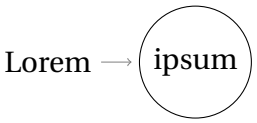

```
\tikz\node [draw,circle,label=60:Lorem,label=below:dolor] {ipsum};
```




```
\tikz \node [draw,minimum size=1cm,pin=60:$A$] {};
```



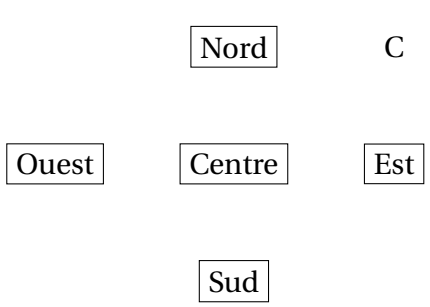

```
\tikz\node[circle,draw,pin={[pin distance=5mm,pin edge={<-,shorten
    <=1mm}]left:Lorem}] {ipsum};
```



4–Positionnement relatif des `node`

4.1–Méthode `=of`

```
\begin{tikzpicture}
\node[draw](C){Centre};
\node[draw](N)[above=of C]{Nord};
\node[draw](S)[below=of C]{Sud};
\node[draw](E)[right=of C]{Est};
\node[draw](O)[left=of C]{Ouest};
\node [above right=2cm of E.north east] {B};
\node [above=1cm of E.north]{C};
\end{tikzpicture}
```

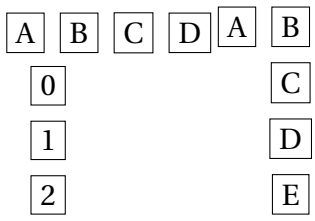


4.2–Bibliothèque `chains`

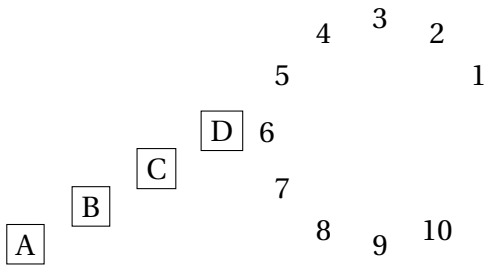
`\usetikzlibrary{chains}` dans le préambule.

```
\begin{tikzpicture}[start chain]
\node [on chain] {A};
\node [on chain] {B};
\node [on chain] {C};
\end{tikzpicture}
\begin{tikzpicture}[start chain,node distance=1mm]
\node [draw,on chain] {A};
\node [draw,on chain] {B};
\node [draw,on chain] {C};
\end{tikzpicture}
```


```
\begin{tikzpicture}[start chain=1 going right,start chain=2 going
    below,node distance=2mm]
\node [on chain=1,draw] {A};
\node [on chain=1,draw] {B};
\node [on chain=1,draw] {C};
\node [on chain=2,draw] at (0.3,-0.7) {0};
\node [on chain=2,draw] {1};
\node [on chain=2,draw] {2};
\node [on chain=1,draw] {D};
\end{tikzpicture}
\begin{tikzpicture}[start chain=going right,node distance=2mm]
\node [draw,on chain] {A};
\node [draw,on chain] {B};
\node [draw,continue chain=going below,on chain] {C};
\node [draw,on chain] {D};
\node [draw,on chain] {E};
\end{tikzpicture}
```



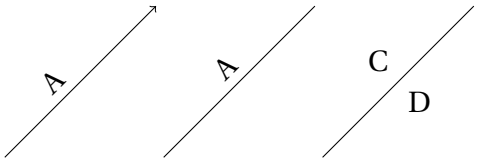

```
\begin{tikzpicture}[start chain=going {at=(\tikzchainprevious),
    shift=(30:1)}]
\node [draw,on chain] {A};
\node [draw,on chain] {B};
\node [draw,on chain] {C};
\node [draw,on chain] {D};
\end{tikzpicture}
\begin{tikzpicture}[start chain=circle placed {at=(\tikzchaincount
    *30:1.5)}]
\foreach \i in {1,...,10}
\node [on chain] {\i};
\end{tikzpicture}
```



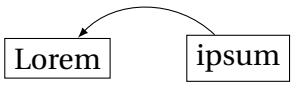
5–Liaisons entre `node`

5.1–Avec `edge`, `auto`, `swap`

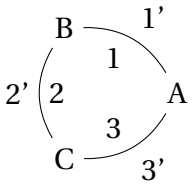
```
\tikz\draw (0,0) edge ["A", ->,sloped] (2,2);
\tikz\draw (0,0) to [edge node={node [sloped,above] {A}}] (2,2);
\tikz \draw (0,0) to [edge label=C, edge label'=D] (2,2);
```




```
\begin{tikzpicture}
\node[draw](C){Lorem};
\node[draw](O)[right=of C]{ipsum} edge [-latex,bend right=45] (C);
\end{tikzpicture}
```

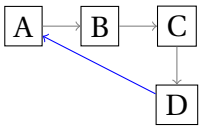



```
\begin{tikzpicture}[auto,bend right]
\node (a) at (0:1) {A};
\node (b) at (120:1) {B};
\node (c) at (240:1) {C};
\draw (a) to node {1} node [swap] {1'} (b)
(b) to node {2} node [swap] {2'} (c)
(c) to node {3} node [swap] {3'} (a);
\end{tikzpicture}
```

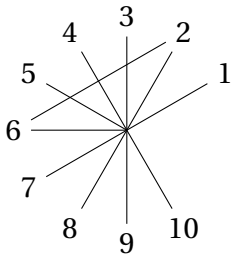


5.2–Bibliothèque `chains`

```
\begin{tikzpicture}[start chain,node distance=5mm,every join/.
    style={->,gray}]
\node [draw,on chain,join] {A};
\node [draw,on chain,join] {B};
\node [draw,on chain,join] {C};
\node [draw,on chain=going below,join,join=with chain-1 by {blue
    ,<-}] {D};
\end{tikzpicture}
```




```
\begin{tikzpicture}[start chain=circle placed {at=(\tikzchaincount
    *30:1.5)}]
\foreach \i in {1,...,10}{
\node [on chain] {\i};
\draw (0,0) -- (circle-\i);}
\draw (circle-2) -- (circle-6);
\end{tikzpicture}
```



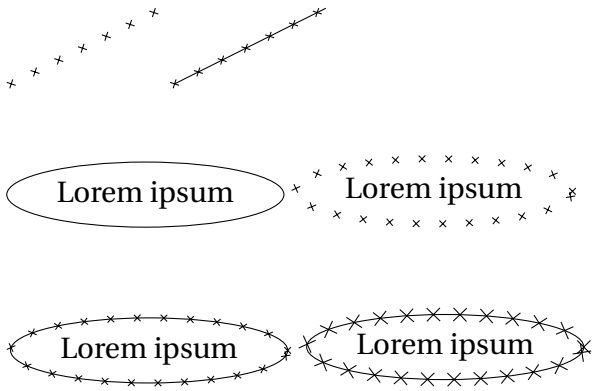
6–Décorations de `node` et de liaisons

Pour utiliser l'ensemble des décorations et des formes, il faut placer ces bibliothèques dans le préambule :

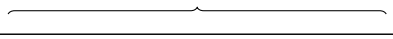
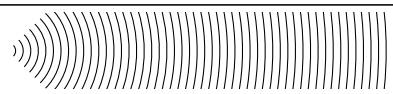
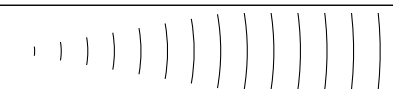
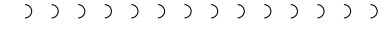
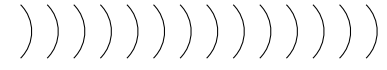
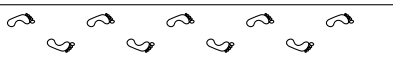
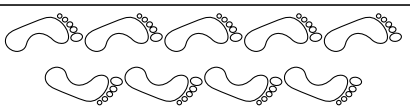
```
\usetikzlibrary{decorations.shape}
\usetikzlibrary{decorations.pathmorphing}
\usetikzlibrary{decorations.pathreplacing}
\usetikzlibrary{decorations.footprints}
```

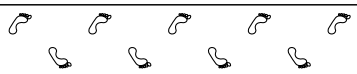
6.1–`node` et liaison entièrement décorés

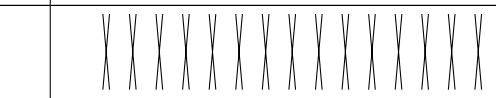
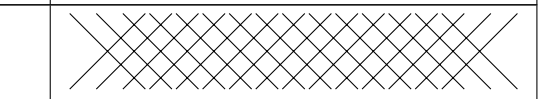
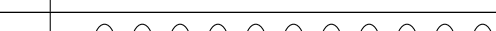
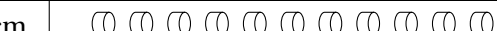
```
\tikz\draw[decorate,decoration=crosses] (0,0)--(2,1);

\tikz\draw[postaction={decorate,draw,decoration=crosses}] (0,0)
    --(2,1);


\tikz\node [draw,ellipse] {Lorem ipsum};

\tikz\node [draw,ellipse,decorate,decoration=crosses] {Lorem ipsum
    };


\tikz\node [draw,ellipse,postaction={decorate,draw,decoration=
    crosses}] {Lorem ipsum};

\tikz\node [draw,ellipse,postaction={decorate,draw,decoration={
    crosses,shape size=5pt}}] {Lorem ipsum};
```



nom de la décoration	option possible	paramètre de l'option et exemple	
straight zigzag			
	segment length=<longueur>	1mm	
	amplitude=<longueur>	2mm	
	meta-segment length=<longueur>	5mm	
random steps			
	segment length=<longueur>	1mm	
	amplitude=<longueur>	2mm	
saw			
	segment length=<longueur>	1mm	
	amplitude=<longueur>	2mm	
zigzag			
	segment length=<longueur>	1mm	
	amplitude=<longueur>	2mm	
bent			
	amplitude=<longueur>	2mm	
	aspect=<valeur>	1	
bumps			
	segment length=<longueur>	1mm	
	amplitude=<longueur>	2mm	
coil			
	segment length=<longueur>	1mm	

	amplitude=<longueur>	2mm	
	aspect=<valeur>	1	
snake			
	segment length=<longueur>	1mm	
	amplitude=<longueur>	2mm	
border			
	segment length=<longueur>	1mm	
	amplitude=<longueur>	2mm	
	angle=<valeur>	135	
brace			
	amplitude=<longueur>	2mm	
	aspect=<valeur>	.7	
	raise=<longueur>	2mm	
	mirror		
expanding waves			
	segment length=<longueur>	1mm	
	angle=<valeur>	10	
ticks			
	segment length<longueur>	1mm	
	amplitude=<longueur>	2mm	
waves			
	segment length=<longueur>	1mm	
	angle=<valeur>	90	
	radius=<longueur>	5mm	
footprints			
	foot of = gnome		
	foot of = bird		
	foot of = felis silvestris		
	foot length=<longueur>	1cm	

	stride length=<longueur>	2cm	
	foot sep=<longueur>	1cm	
	foot angle =<valeur>	45	

forme	option et exemple	
crosses		
	segment length =1cm	
	shape width =2mm	
	shape height =1cm	
	shape size =1cm	
triangles *(mêmes options que crosses)*	shape size =3mm	
shape backgrounds,shape=dart	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=circle	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=rectangle	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=cloud	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=starburst	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=tape	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=kite	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=signal	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=diamond	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=ellipse	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=trapezium	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=semicircle	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=regular polygon	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=isosceles triangle	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=circular sector	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=cylinder	shape size =3mm,shape sep=.5cm	
shape backgrounds,shape=star	shape size =3mm,shape sep=.5cm	

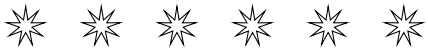
```
\tikz\draw [decorate,decoration={shape backgrounds,shape=dart,
    shape size=2mm},fill=gray](0,0) -- (5,0);
```



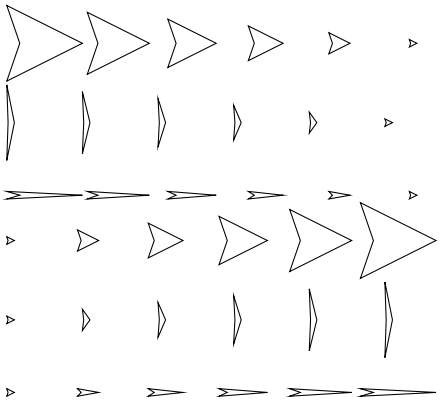
```
\tikz\draw [decorate,decoration={shape backgrounds,shape=dart,
    shape size=2mm},fill=gray,shape border rotate=90](0,0) -- (5,0)
    ;
```

```
\tikz\draw [decorate,decoration={shape backgrounds,shape=star,
    shape sep=.5cm, shape size=.5cm},
star points=9](0,0) -- (5,0);
```

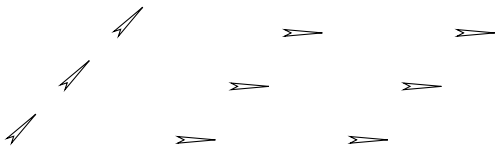
```
\tikz\draw [decorate,decoration={shape backgrounds,shape=star,
    shape sep=1cm, shape size=.5cm},
star points=9,star point ratio=3](0,0) -- (5,0);
```



```
\tikz\draw[decorate,decoration={shape backgrounds,shape=dart,shape
     size=.1cm,shape start size=1cm,shape scaled,shape sep=1cm }]
    (0,0) -- (5,0);

\tikz\draw[decorate,decoration={shape backgrounds,shape=dart,shape
     size=.1cm,shape start height=1cm,shape scaled,shape sep=1cm }]
     (0,0) -- (5,0);

\tikz\draw[decorate,decoration={shape backgrounds,shape=dart,shape
     size=.1cm,shape start width=1cm,shape scaled,shape sep=1cm }]
    (0,0) -- (5,0);

\tikz\draw[decorate,decoration={shape backgrounds,shape=dart,shape
     size=.1cm,shape end size=1cm,shape scaled,shape sep=1cm }]
    (0,0) -- (5,0);

\tikz\draw[decorate,decoration={shape backgrounds,shape=dart,shape
     size=.1cm,shape end height=1cm,shape scaled,shape sep=1cm }]
    (0,0) -- (5,0);

\tikz\draw[decorate,decoration={shape backgrounds,shape=dart,shape
     size=.1cm,shape end width=1cm,shape scaled,shape sep=1cm
    }](0,0) -- (5,0);
```

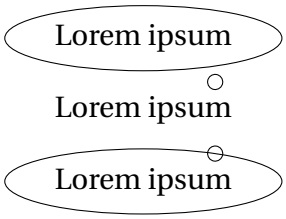


```
\tikz\draw[decorate,decoration={shape backgrounds,shape=dart,shape
     width=.5cm,shape sep=1cm,shape sloped=true}] (0,0) - - (2,2) ;

\tikz\draw[decorate,decoration={shape backgrounds,shape=dart,shape
     width=.5cm,shape sep=1cm,
shape sloped=false}] (0,0) - - (2,2) ;

\tikz\draw[decorate,decoration={shape backgrounds,shape=dart,
    transform={shift only},shape width=5mm,segment length=.5cm,
    shape sep=1cm}] (0,0) - - (2,2) ;
```

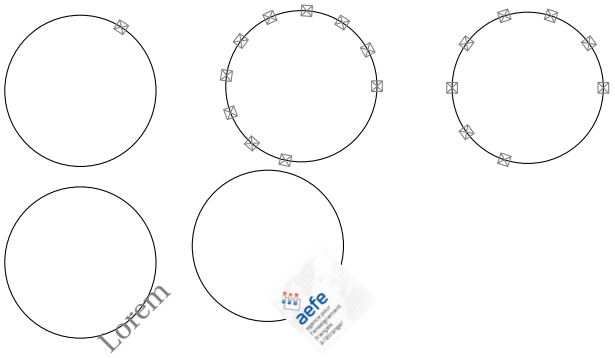


6.2–`node` et liaison partiellement décorés

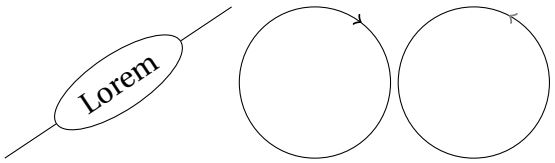
```
\tikz\node [draw,ellipse] {Lorem ipsum};

\tikz\node [draw,ellipse,decorate,decoration={markings,mark=at
    position 1cm with{\draw circle(.1);}}] {Lorem ipsum};

\tikz\node [draw,ellipse,postaction={decorate},decoration={
    markings,mark=at position 1cm with{\draw circle(.1);}}] {Lorem
    ipsum};
```




```
\tikz\draw [postaction={decorate},decoration={markings,mark=at
    position 1cm
with {
\draw[gray] (-2pt,-2pt) - - (2pt,2pt) ;
\draw[gray](2pt,-2pt) - - (-2pt,2pt) ;
\draw[gray] (-2pt,-2pt) rectangle (2pt,2pt) ;
}}]  circle (1) ;
\tikz\draw [postaction={decorate},decoration={markings,mark=
    between positions 0 and .75 step 5mm
with {
\draw[gray] (-2pt,-2pt) - - (2pt,2pt) ;
\draw[gray](2pt,-2pt) - - (-2pt,2pt) ;
\draw[gray] (-2pt,-2pt) rectangle (2pt,2pt) ;
}}]  circle (1) ;
\tikz\draw [postaction={decorate},decoration={markings,mark=
    between positions 0 and .75 step .1
with {
\draw[gray] (-2pt,-2pt) - - (2pt,2pt) ;
\draw[gray](2pt,-2pt) - - (-2pt,2pt) ;
\draw[gray] (-2pt,-2pt) rectangle (2pt,2pt) ;
}}]  circle (1) ;
\tikz\draw [postaction={decorate},decoration={markings,mark=at
    position -.125
with{
\node[gray,transform shape]{Lorem};
}}] circle (1) ;
\tikz\draw [postaction={decorate},decoration={markings,mark=at
    position -.125
with{
\node[transform shape]{
\includegraphics[width=1cm]{aefe} };
}}] circle (1) ;
```



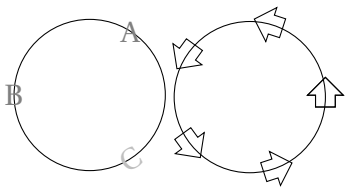

```
\tikz\draw [decorate,decoration={markings,mark connection node=A,
    mark=at position 0.5 with
{\node [draw,ellipse,transform shape] (A) {Lorem} ;}}](0,0)--(3,2)
     ;

\tikz\draw[postaction=decorate,decoration={ markings,mark=at
    position 1cm with
{\arrow[thick,gray]{<}} ;}]  circle (1) ;

\tikz\draw[postaction=decorate,decoration={ markings,mark=at
    position 1cm with
{\arrowreversed[thick]{<}} ;}]  circle (1) ;
```



Au lieu de {<} on peut utiliser l'ensemble des commandes de la bibliothèque `arrow`, par exemple :

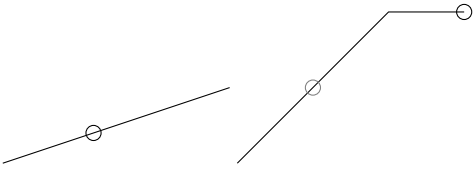
> `stealth, |, diamond, o, latex, triangle 90 (60 45), open triangle 90 (60 45), angle 90 (60 45), hooks, *, open diamond, square, open square, right hook`

```
\tikz\draw[postaction=decorate,decoration={ markings,
mark=at position 1cm with \node[gray]{A};
,mark=at position .5 with \node[gray]{B};
,mark=at position -1cm with {\node[lightgray,transform shape]{C
    };}}]circle (1) ;

\tikz\draw[postaction=decorate,decoration={ markings,
mark=between positions 0 and 1 step .2 with {
\node [single arrow,draw,single arrow head extend=3pt, transform
    shape] {};}}]circle (1) ;
```



6.3–Avec pic

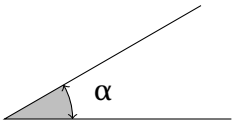
```
\tikz\draw (0,0) -- (3,1)pic[pos=.4]{code={\draw circle(1mm);}};

\tikz[A/.pic={\draw circle(1mm);}]\draw(0,0)--(2,2)pic[gray,pos
    =.5]{A}-- (3,2)pic{A};
```



6.3.1–Angles avec pic

\usetikzlibrary{angles, quotes} dans le préambule.

```
\begin{tikzpicture}[scale=3]
\coordinate (A) at (1,0);
\coordinate (B) at (0,0);
\coordinate (C) at (30:1cm);
\draw (A) -- (B) -- (C)
pic [draw,<->, fill=lightgray, angle radius=9mm,"$\
    alpha$",angle eccentricity=1.5] {angle = A--B--C};
\end{tikzpicture}
```



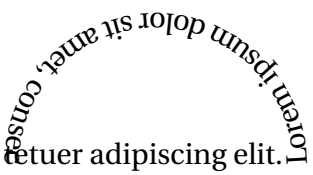
6.4–`node` et liaison décorés avec du texte

`\usetikzlibrary{decorations.text}` dans le préambule.

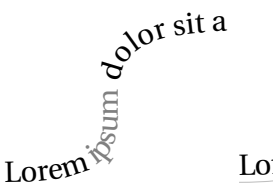
6.4.1–sans effets spéciaux

Remarque : la compilation avec pdflatex peut donner un message d'erreur avec les caractères accentués
Exemples de syntaxe à utiliser :
`{\'e}` pour é

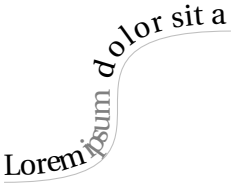
```
\tikz\node[draw,semicircle,minimum size=2cm,decorate,
    decoration={text along path,text={Lorem ipsum dolor
     sit amet, consectetuer adipiscing elit.}}]{};
```



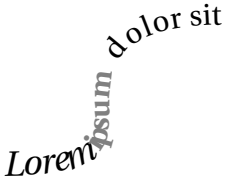

```
\tikz\draw[decorate,decoration={text along path,text={
    Lorem |\color{gray}|ipsum ||dolor sit amet,}}](0,0)
    ..controls +(right:3cm) and +(left:3cm).. (3,2);
```



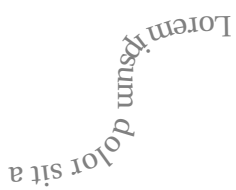

```
\tikz\draw[lightgray,postaction={decorate},decoration={
    raise=1mm,text along path,text={Lorem |\color{gray
    }|ipsum ||dolor sit amet,}}](0,0)..controls +(right
    :3cm) and +(left:3cm).. (3,2);
```



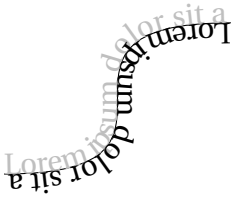

```
\tikz\draw[decorate,decoration={raise=1mm,text along
    path,text={ |\itshape\large|Lorem |\bfseries\color{
    gray}|ipsum|| dolor sit amet,}}](0,0)..controls +(
    right:3cm) and +(left:3cm).. (3,2);
```



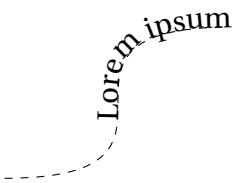

```
\tikz\draw[decorate,decoration={text along path,text={
    Lorem ipsum dolor sit amet, consectetuer adipiscing
     elit.},text color=gray, reverse path }] (0,0)..
    controls +(right:3cm) and +(left:3cm).. (3,2);
```



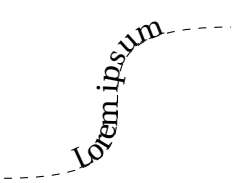

```
\tikz\draw
[postaction={decorate,decoration={text along path,text
    ={Lorem ipsum dolor sit amet,}, text color=
    lightgray}}]
[postaction={decorate,decoration={text along path,text
    ={Lorem ipsum dolor sit amet,},reverse path}}]
(0,0)..controls +(right:3cm) and +(left:3cm).. (3,2);
```



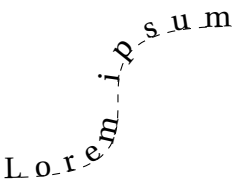

```
\tikz\draw[dashed,postaction=decorate,decoration={ text
     along path,text={Lorem ipsum},
text align={align=right}}](0,0)..controls +(right:3cm)
    and +(left:3cm).. (3,2);
```



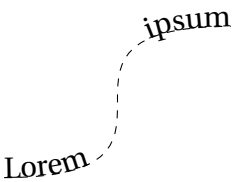

```
\tikz\draw[dashed,postaction=decorate,decoration={text
    along path,text={Lorem ipsum},
text align={align=left,left indent=1cm} } ] (0,0)..
    controls +(right:3cm) and +(left:3cm).. (3,2);
```




```
\tikz\draw[dashed,postaction=decorate,decoration={text
    along path, text={Lorem ipsum},
text align={fit to path}}] (0,0)..controls +(right:3cm)
     and +(left:3cm).. (3,2);
```

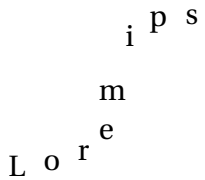



```
\tikz\draw[dashed,postaction=decorate,decoration={text
    along path, text={Lorem ipsum},
text align={fit to path stretching spaces}}] (0,0)..
    controls +(right:3cm) and +(left:3cm).. (3,2);
```



6.4.2–avec effets spéciaux

```
\tikz\draw[decorate,decoration={text effects along path
    ,text={Lorem ipsum dolor sit amet}}](0,0)..controls
     +(right:3cm) and +(left:3cm).. (3,2);
```

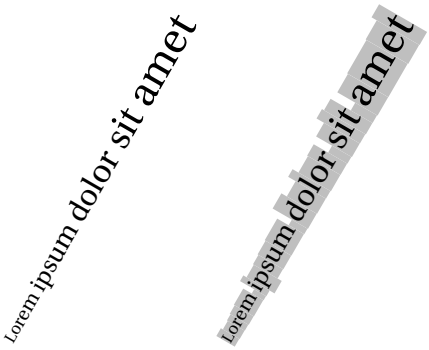


```
\tikz\draw [decorate,
decoration={text effects along path,
text={Lorem ipsum dolor },
text effects/.cd,
path from text,
character count=\i,
characters={text along path,
shape=star,
fill=lightgray}}] (0,0);
```

```
\tikz\draw[decorate,decoration={
text effects along path,
text={Lorem ipsum dolor sit amet},
text effects/.cd,
path from text,
character count=\i,
character total=\n,
characters={text along path,
scale=\i/\n+0.5}}]
(0,0);%..controls +(right:3cm) and +(left:3cm).. (3,2);
```

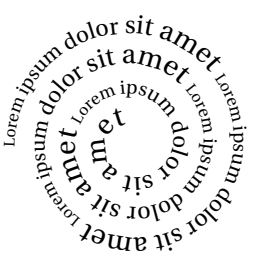


```
\tikz\draw[decorate,decoration={
text effects along path,
text={Lorem ipsum dolor sit amet},
text effects/.cd,
path from text,
path from text angle=60,
character count=\i,
character total=\n,
characters={text along path,
scale=\i/\n+0.5}}]
(0,0);
\tikz\draw[decorate,decoration={
text effects along path,
text={Lorem ipsum dolor sit amet},
text effects/.cd,
path from text,
path from text angle=60,
character count=\i,
character total=\n,
characters={text along path,
fill=gray!50,
scale=\i/\n+0.5}}] (0,0);
```



```
\tikz\draw[decorate,decoration={
text effects along path,
text={Lorem ipsum dolor sit amet},
text effects/.cd,
character count=\i,
character total=\n,
characters={text along path,
evaluate={\c=\i/\n*100;},
text=black!\c,%lightgray,
scale=\i/\n+0.5}}]
(0,0)..controls +(right:3cm) and +(left:3cm).. (3,2);
```

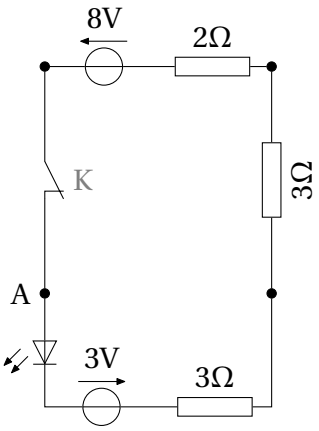
```
\tikz\draw[ decorate,decoration={text effects along
    path,
text={Lorem ipsum dolor sit amet\ },
text effects/.cd,
repeat text,
character count=\m,
character total=\n,
characters={text along path,
scale=0.5+\m/\n/2}}]
(180:2) \foreach \a in {0,...,12}{ arc (180-\a*90:90-\a
    *90:1.5-\a/10) };
```



7–Circuits électriques

\usetikzlibrary{circuits.ee.IEC} dans le préambule.

```
\begin{tikzpicture}[scale=3,circuit ee IEC]
\node [contact,label=left:A] (l1) at (0,0) {};
\node [contact] (r1) at (1,0) {};
\node [contact] (l2) at (0,1) {};
\node [contact] (r2) at (1,1) {};
\draw (l2) to [voltage source={near start,direction
    info={<-,volt=8}},resistor={ohm=2,near end}] (r2);
\draw (r1) to[resistor={info' sloped={$3\Omega$}}] (r2)
    ;
\draw (l1) to [diode=light emitting'] ++(down:.5)to [
    voltage source={near start,direction info={volt
    =3}},resistor={near end,ohm=3}] ++(right:1)to (r1);
\draw (l2) to [break contact={info={[gray]$K$}}](l1);
\end{tikzpicture}
```



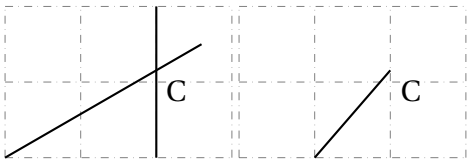
8–Éléments de géométrie

8.1–Intersection

\usetikzlibrary{intersections} dans le préambule.

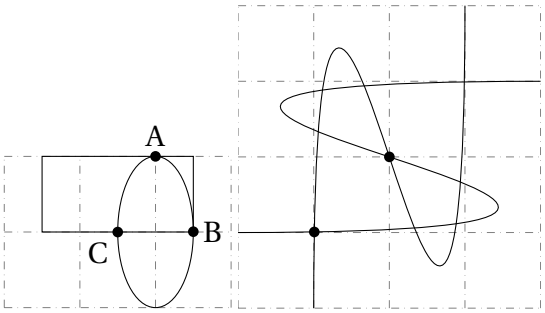
8.1.1–Intersection de 2 traits

```
\begin{tikzpicture}
\draw [thick,name path=A] (2,0) -- (2,2);
\draw [thick,name path=B] (0,0) -- (30:3);
\node[anchor=north west,name intersections={of=A and B,
     by=C}] at (C) {C};
\end{tikzpicture}

\begin{tikzpicture}
\path [name path=A] (2,0) -- (2,2);
\path [name path=B]  (0,0) -- (30:3);
\draw [thick,name intersections={of=A and B, by={[label
    =-45:$C$]C}}] (1,0) -- (C);
\end{tikzpicture}
```

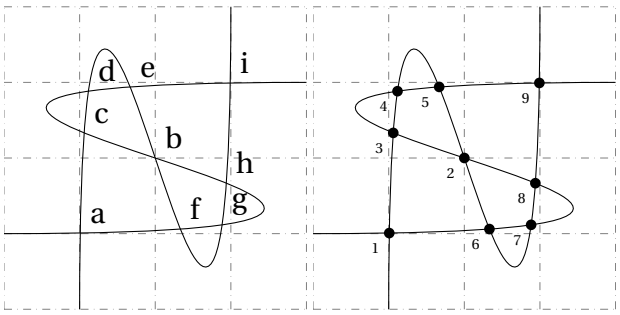


8.1.2–Plusieurs intersections de 2 traits

```
\begin{tikzpicture}
\draw [name path=E] (2,1) ellipse (0.5 and 1);
\draw [name path=R] (0.5,1) rectangle +(2,1);
\fill [name intersections={of=E and R}]
(intersection-1) circle (2pt) node[above] {A}
(intersection-2) circle (2pt) node[right] {B}
(intersection-3) circle (2pt) node[below left] {C};
\end{tikzpicture}

\begin{tikzpicture}
\clip (-2,-2) rectangle (2,2);
\draw [name path=A] (-2,-1) .. controls (8,-1) and
    (-8,1) .. (2,1);
\draw [name path=B] (-1,-2) .. controls (-1,8) and
    (1,-8) .. (1,2);
\fill [name intersections={of=A and B, by={a,b}}]
(a) circle (2pt)
(b) circle (2pt);
\end{tikzpicture}
```

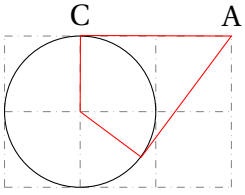



```
\begin{tikzpicture}
\clip (-2,-2) rectangle (2,2);
\draw [name path=A] (-2,-1) .. controls (8,-1) and
    (-8,1) .. (2,1);
\draw [name path=B] (-1,-2) .. controls (-1,8) and
    (1,-8) .. (1,2);
\fill [name intersections={of=A and B, by={[label=45:a
    ],[label=45:...],[label=45:i]}}];
\end{tikzpicture}

\begin{tikzpicture}
\clip(-2,-2)rectangle(2,2);
\draw [name path=A] (-2,-1) .. controls (8,-1) and
    (-8,1) .. (2,1);
\draw [name path=B] (-1,-2) .. controls (-1,8) and
    (1,-8) .. (1,2);
\fill [name intersections={of=A and B, name=i, total=\t
    }]
\foreach \s in {1,...,\t}{(i-\s) circle (2pt) node[
    below left] {\tiny\s}};
\end{tikzpicture}
```



8.2–Tangentes à un cercle

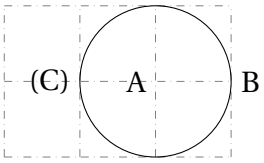
```
\begin{tikzpicture}
\draw[help lines,dashdotted] (0,0) grid (3,2);
\coordinate [label=above:$A$] (A) at (3,2);
\node [circle,draw,minimum size=2cm,label=above:$C$] (C
    ) at (1,1)  {};
\draw[red] (A) -- (tangent cs:node=C,point={(A)},
    solution=1) --
(C.center) -- (tangent cs:node=C,point={(A)},solution
    =2) -- cycle;
\end{tikzpicture}
```



8.3–Cercle passant par un point

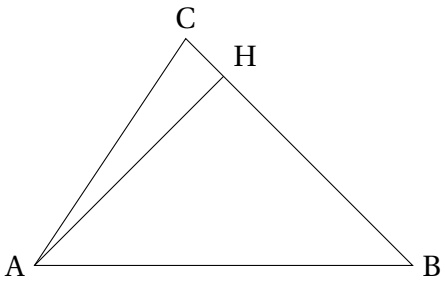
\usetikzlibrary{through} dans le préambule.

```
\begin{tikzpicture}
\coordinate [label=left:$A$] (A) at (2,1);
\coordinate [label=right:$B$] (B) at (3,1);
\node [draw,circle through=(B),label=left:$(C)$] at (A)
     {};
\end{tikzpicture}
```



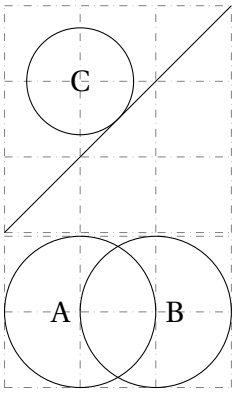
8.4–Perpendiculaire à un segment

```
\begin{tikzpicture}
\draw(0,0)coordinate[label=left:$A$](A)--(5,0)
    coordinate[label=right:$B$](B)--(2,3)coordinate[
    label=above:$C$](C)--cycle;
\draw(A)--($(B)!(A)!(C)$)coordinate[label=45:$H$];
\end{tikzpicture}
```



8.5–Calculs avec coordonnées

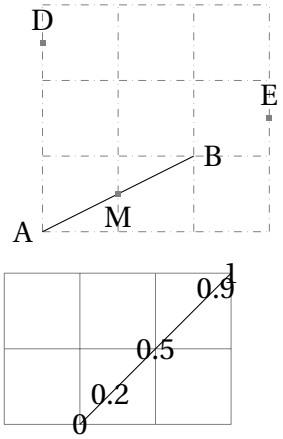
```
\begin{tikzpicture}
\draw [help lines,dashdotted] (0,0) grid (3,3);
\coordinate (A) at (0,0);
\coordinate (B) at (3,3);
\draw (A) -- (B);
\node (C) at (1,2) {C};
\draw let \p1 = ($ (A)!(C)!(B) - (C) $),
\n1 = {veclen(\x1,\y1)}
in (C)circle(\n1);
\end{tikzpicture}
```




```
\begin{tikzpicture}
\draw [help lines,dashdotted] (-1,-1) grid (2,1);
\coordinate [label=left:$A$] (A) at (0,0);
\coordinate [label=right:$B$] (B) at (1,0);
\draw (A) let \p1 = ($ (B) - (A) $) in circle ({veclen
    (\x1,\y1)});
\node [draw,circle through=(A),label=right:$D$] at (B)
    {};
\end{tikzpicture}
```



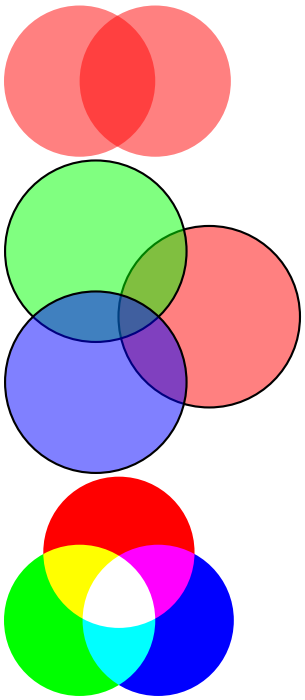
```
\begin{tikzpicture}
\draw [help lines,dashdotted]  (0,0) grid (3,3);
\coordinate [label=left:$A$] (A) at (0,0);
\coordinate [label=right:$B$] (B) at (2,1);
\draw (A) -- (B);
\node [fill=gray,inner sep=1pt,label=below:$M$] (M) at
    ($ (A)!.5!(B) $) {}; %M milieu de AB
\node [fill=gray,inner sep=1pt,label=above:$E$] (E) at
    ($ (M) ! 2 ! (B) $) {};% ME=2MB
\node [fill=gray,inner sep=1pt,label=above:$D$] (D) at
    ($ (M) ! 2! 90:(B) $) {};% MD=2MB suivi d'une
    rotation de 90°
\end{tikzpicture}
```




```
\begin{tikzpicture}
\draw [help lines] (0,0) grid (3,2);
\draw (1,0) -- (3,2);
\foreach \i in {0,0.2,0.5,0.9,1}
\node at ($(1,0)!\i!(3,2)$) {\i};
\end{tikzpicture}
```

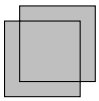
9–Opacité et addition de couleurs

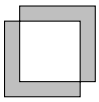
```
\begin{tikzpicture}[fill opacity=0.5]
\fill[red] (0,0) circle (1);
\fill[red] (1,0) circle (1);
\end{tikzpicture}

\begin{tikzpicture}[thick,fill opacity=0.5]
\filldraw[fill=red](0:1cm)circle (12mm);
\filldraw[fill=green] (120:1cm) circle (12mm);
\filldraw[fill=blue] (-120:1cm) circle (12mm);
\end{tikzpicture}

\tikz [blend group=screen] {
\fill[red]( 90:.6) circle (1);
\fill[green] (210:.6) circle (1);
\fill[blue] (330:.6) circle (1);
}
```



10–Option `even odd rule`

```
\begin{minipage}{.5\textwidth}
\begin{tikzpicture}[scale=.6]
\fill[lightgray](0,0) circle (1) (1.5,0) circle (1);
\fill[lightgray,even odd rule](4,0) circle (1) (5.5,0)
    circle (1);
\end{tikzpicture}

\begin{tikzpicture}
\draw[fill=lightgray] (0,0)rectangle (1,1)
[shift={(2mm,2mm)}](0,0)rectangle (1,1);
\end{tikzpicture}

\begin{tikzpicture}[even odd rule]
\draw[fill=lightgray] (0,0)rectangle (1,1)
[shift={(2mm,2mm)}](0,0)rectangle (1,1);
\end{tikzpicture}
```

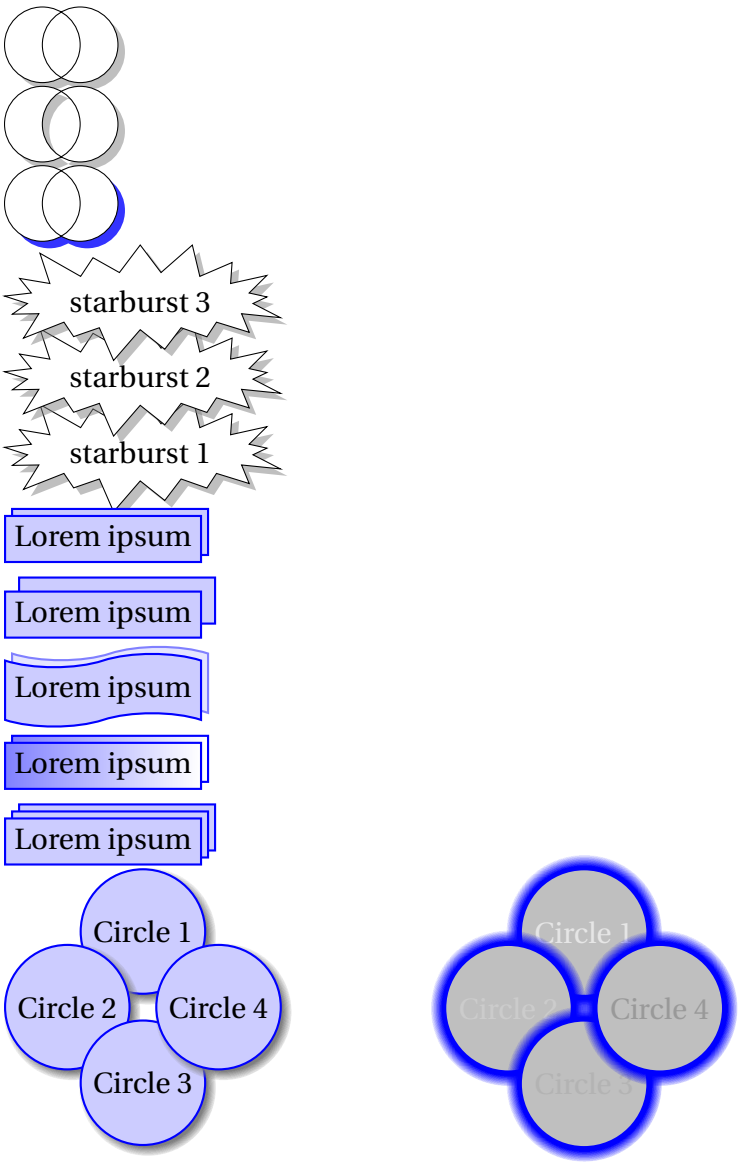




11–Bibliothèque shadows

\usetikzlibrary{shadows} dans le préambule

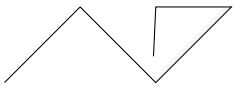
```
\tikz
\filldraw [drop shadow,fill=white] (0,0) circle (.5)
    (0.5,0) circle (.5);

\tikz [even odd rule]
\filldraw [drop shadow,fill=white] (0,0) circle (.5)
    (0.5,0) circle (.5);

\begin{tikzpicture}[every shadow/.style={opacity=.8,
    fill=blue}]
\filldraw [drop shadow,fill=white] (0,0) circle (.5)
    (0.5,0) circle (.5);
\end{tikzpicture}

\begin{tikzpicture}
\foreach \i in {1,...,3}
\node[starburst,drop shadow,fill=white,draw] at (0,\i)
    {starburst \i};
\end{tikzpicture}

\begin{tikzpicture}
\node [copy shadow,fill=blue!20,draw=blue,thick] {Lorem
     ipsum};
\node at (0,-1) [copy shadow={shadow xshift=1ex,shadow
    yshift=1ex},
fill=blue!20,draw=blue,thick]{Lorem ipsum};
\node at (0,-2) [copy shadow={opacity=.5},tape,
fill=blue!20,draw=blue,thick]{Lorem ipsum};
\node at (0,-3) [copy shadow={left color=blue!50},
left color=blue!50,draw=blue,thick]{Lorem ipsum};
\node at (0,-4)[double copy shadow,fill=blue!20,draw=
    blue,thick] {Lorem ipsum};
\end{tikzpicture}

\begin{tikzpicture}
\foreach \i in {1,...,4}
\node[circle,circular drop shadow,draw=blue,fill=blue
    !20,thick]
at (\i*90:1) {Circle \i};
\end{tikzpicture}

\begin{tikzpicture}
\foreach \i in {1,...,4}
\node[circle,circular glow={fill=blue},fill=lightgray,
    text=black!\i0]
at (\i*90:1) {Circle \i};
\end{tikzpicture}
```



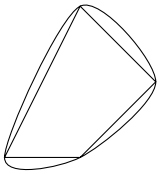
12–Graphes avec `plot`

12.1–Avec `coordinates`

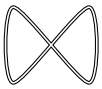
```
\tikz\draw plot coordinates {(0,0) (1,1) (2,0) (3,1)
    (2,1) (10:2cm)};
```



```
\tikz\draw plot[smooth cycle] coordinates{(0,0) (1,0)
    (2,1) (1,2)} plot coordinates{(0,0) (1,0) (2,1)
    (1,2)} -- cycle;
```

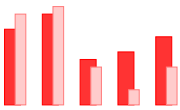


```
\tikz \draw[double]
plot[smooth cycle] coordinates{(0,0) (1,1) (1,0) (0,1)
    };
```



```
\begin{tikzpicture}[ycomb]
\draw[color=red,line width=6pt]
plot coordinates{(0,1) (.5,1.2) (1,.6) (1.5,.7) (2,.9)
    };
\draw[color=red!50,line width=4pt,xshift=3pt]
plot coordinates{(0,1.2) (.5,1.3) (1,.5) (1.5,.2)
    (2,.5)};
\end{tikzpicture}
```

```
\begin{tikzpicture}[ybar]
\draw[color=red,fill=red!80,bar width=6pt]
plot coordinates{(0,1) (.5,1.2) (1,.6) (1.5,.7) (2,.9)
    };
\draw[color=red!50,fill=red!20,bar width=4pt,bar shift
    =3pt]
plot coordinates{(0,1.2) (.5,1.3) (1,.5) (1.5,.2)
    (2,.5)};
\end{tikzpicture}
```



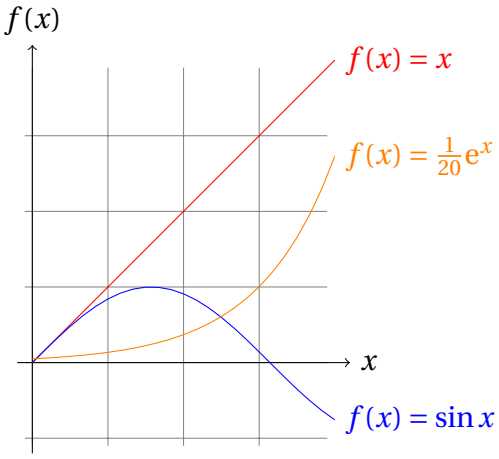
12.2–Avec `gnuplot`

Si `gnuplot` est installé sur l'ordinateur, avec TeXmaker Options/Configurer TeXmaker en modifiant la ligne pdflatex ainsi (en clair en ajoutant -shell-escape) :

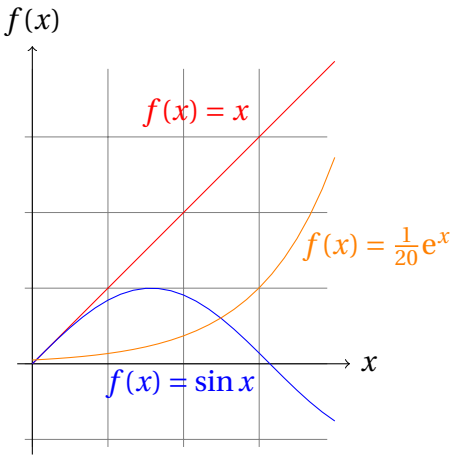
"/usr/local/texlive/2015/bin/x86_64-linux/pdflatex" -interaction=nonstopmode -shell-escape %.tex

on peut tracer des courbes mathématiques de cette façon :

```
\begin{tikzpicture}[domain=0:4]
\draw[very thin,color=gray] (-0.1,-1.1) grid (3.9,3.9);
\draw[->] (-0.2,0) -- (4.2,0) node[right] {$x$};
\draw[->] (0,-1.2) -- (0,4.2) node[above] {$f(x)$};
\draw[color=red]
plot[id=x]function{x}node[right] {$f(x) =x$};
\draw[color=blue]plot[id=sin] function{sin(x)}node[
    right] {$f(x) = \sin x$};
\draw[color=orange] plot[id=exp] function{0.05*exp(x)}
    node[right] {$f(x) = \frac{1}{20} \mathrm e^x$};
\end{tikzpicture}
```



```
\begin{tikzpicture}[domain=0:4,label/.style={postaction
    ={
decorate,
decoration={
markings,
mark=at position .75 with \node #1;}}}]
\draw[very thin,color=gray] (-0.1,-1.1) grid (3.9,3.9);
\draw[->] (-0.2,0) -- (4.2,0) node[right] {$x$};
\draw[->] (0,-1.2) -- (0,4.2) node[above] {$f(x)$};
\draw[red,label={[above left]{$f(x)=x$}}]
plot (\x,\x);
\draw[blue,label={[below left]{$f(x)=\sin x$}}]
plot (\x,{sin(\x r)});
\draw[orange,label={[right]{$f(x)= \frac{1}{20} \mathrm
    e^x$}}] plot (\x,{0.05*exp(\x)});
\end{tikzpicture}
```



13–Syntaxes équivalentes

`\draw(node cs:name=a)--(node cs:name=b);`	`\draw(a) -- (b);`	
`\draw (canvas cs: x=0cm,y=2ex)-- (canvas polar cs: radius=2ex,angle=30);`	`\draw (0cm,y=2ex)--(30:2ex);`	
`\coordinate[label=left:$A$] (A)at(0,0);`	`\node[left] (A)at(0,0){A};`	A
`\path(0,0)edge(2ex,0);`	`\draw(0,0)--(2ex,0);`	
`\draw circle[radius=1ex];`	`\draw circle (1ex);`	
`\draw ellipse[x radius=2ex,y radius=1ex];`	`\draw ellipse(2ex and 1ex);`	
`\draw (0,0)arc[start angle=0,end angle=90,radius=1ex];`	`\draw (0,0)arc(0:90:1ex);`	
`\coordinate(X)at (intersection cs:first line={(A)--(B)},second line={(E)--(F)});`		