



TikZ

Drawing lines, curves, and clouds

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- ▷ 'Program' graphics as you 'program' Latex documents
- ▷ Need to import tikz package
- ▷ Write in tikzpicture environment
- ▷ Or for inline images like ●

```
\tikz{ \fill[red] circle (0.3em); }
```

- ▷ Quickly produce simple graphics
- ▷ Use macros as in Latex
- ▷ Make matlab plots nicer (and readable)

```
\begin{tikzpicture}[overlay, scale=1, xshift= 1cm]
  TikZ COMMANDS such as
  \draw (0,0) -- (6,0);    !! with semicolon
\end{tikzpicture}
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- ▷ A simple line

```
\draw (0, -2.5) -- (0, 2.5);
```

- ▷ Add options

```
\draw[ultra thick] (0, -2.5) -- (0, 2.5);
```

```
\draw[very thick, red, dashed] (0, -2.5) -- (0, 2.5);
```

```
\draw (0, -2.5) -- (0, 2.5) -- (2, 2.5);
```



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  TikZ COMMANDS such as
  \draw (0,0) -- (6,0);    !! with semicolon
\end{tikzpicture}
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- ▷ A simple line

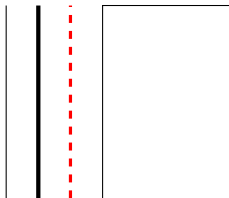
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```

- ▷ Add options

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```



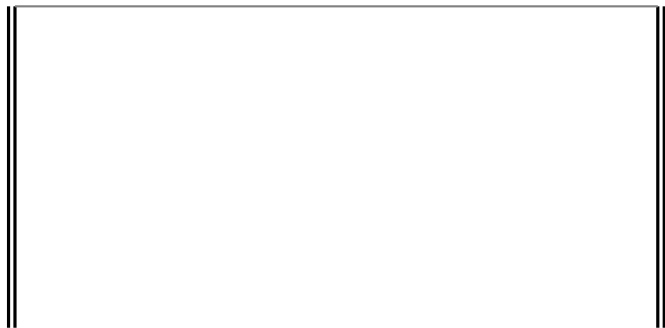
## ▷ Add a curve

```
\draw (0, 2.5) -- (10, 2.5);  
\draw[red] (0, 2.5) .. controls (5,-0.7) .. (10, 2.5);  
\draw[blue] (0, 2.5) .. controls (3.5, -0.7)  
and (6.5, -0.7) .. (10, 2.5);
```



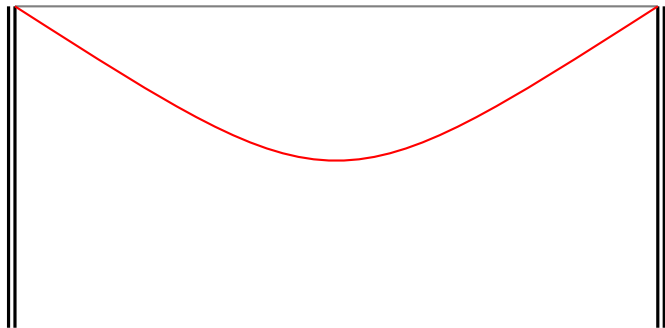
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## ▷ Add a curve

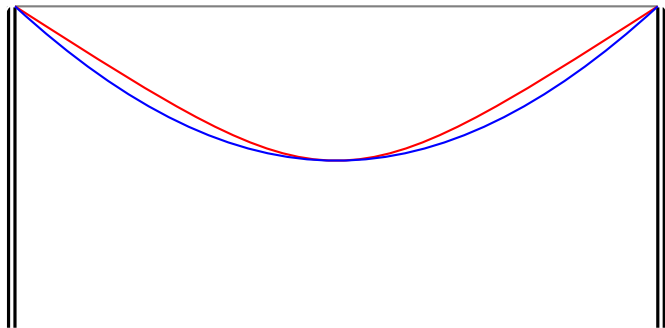
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and (6.5, -0.7) .. (10, 2.5);
```



## ▷ Rectangles

```
\draw[fill=gray] (0,0) -- (10,0) -- (10,-1) --  
(10,-1) -- (0,-1) -- cycle;  
\fill[blue, thick, draw=orange] (2,0.5) --  
(8,0.5) -- (8,-0.5) -- (2,-0.5);
```

## ▷ Circles

```
\draw (0, 1) circle (2ex);  
\fill[orange] (9, 1) circle (3.5ex);
```

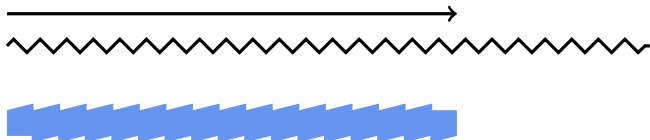
## ▷ Add text by

```
\node at (9.0, 1.0) { $\Omega$ };
```



```
\draw[->] (0, 2) -- (7, 2);  
\draw[yshift = 1cm, snake] (0, 2) -- (10, 2);  
\fill[blue, snake=saw] (0, -2) -- (7, -2) --  
(7, -3) -- (0, -3) -- cycle;
```

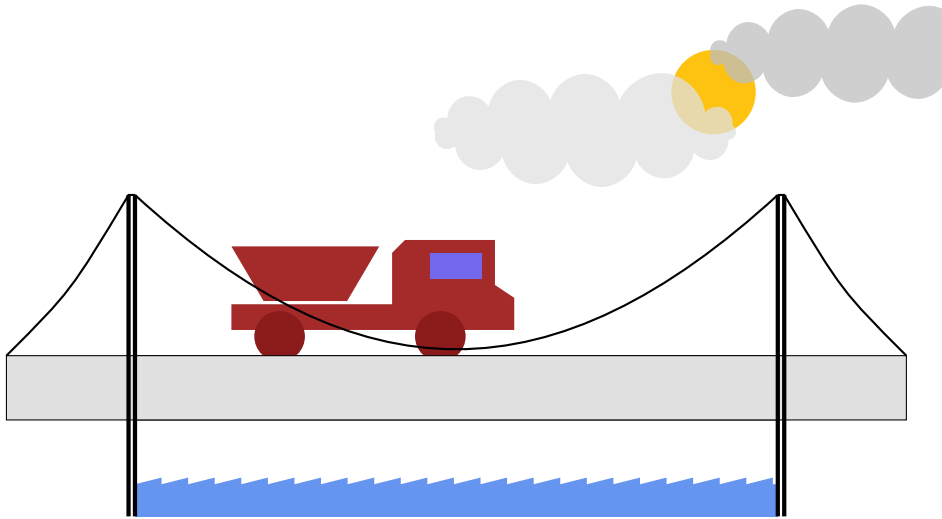
```
\node[cloud, cloud puffs=13.5, minimum width=4cm,  
minimum height=1.5cm, align=center, fill=red,  
opacity=0.75] (cloud) at (6, -3.5) {};
```



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\draw[->] (0, 2) -- (7, 2);  
\draw[yshift = 1cm, snake] (0, 2) -- (10, 2);  
\fill[blue, snake=saw] (0, -2) -- (7, -2) --  
(7, -3) -- (0, -3) -- cycle;
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\node[cloud, cloud puffs=13.5, minimum width=4cm,  
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opacity=0.75] (cloud) at (6, -3.5) {};
```





- ▷ Define variables

```
\def\x{1.5};
```

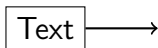
- ▷ Define nodes

```
\node[draw] (L0) at (0, \x) {Text};
```

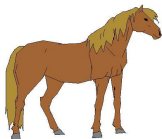
```
\node (R0) at (4, \x) {\includegraphics{pferd1.jpg}};
```

- ▷ Draw connection

```
\draw[->, thick, shorten >=5mm] (L0) to (R0);
```



Text

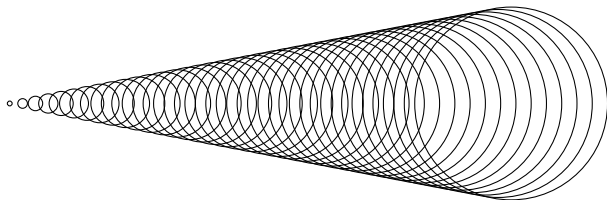


- ▷ Loop with one variable

```
\foreach \x in {0, 0.2, ..., 8} {  
  \draw (\x, 0) circle (2ex);  
}
```

- ▷ Loop with several variables

```
\foreach \x/\y in {0/1, ..., 8/9} {
```



- ▷ Matlab2Tikz (Nico)
- ▷ In general for plots

