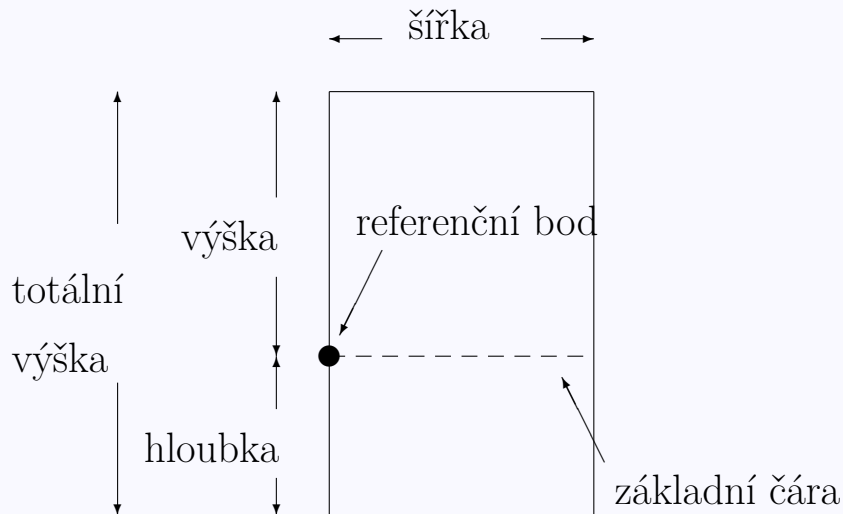


```
\usepackage{graphicx}
```

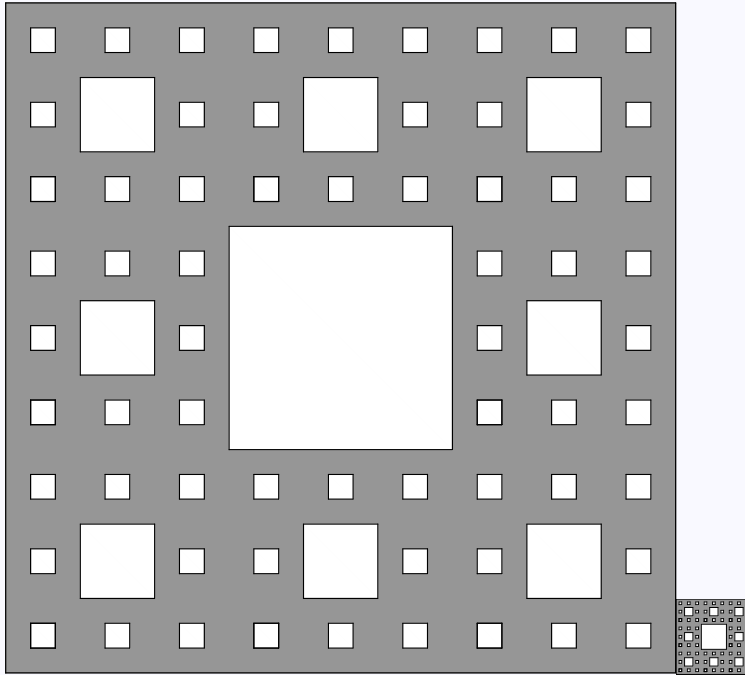
```
\includegraphics{anti.pdf}
```



## Jednoduchý *box* v L<sup>A</sup>T<sub>E</sub>Xu



Nepovinné parametry slouží k další grafické úpravě vkládaných objektů (obrázků, textu apod.): `height`, `totalheight`, `width`, `scale`, `angle`, `origin`, `bb`, `viewport`, `clip`, `noclip`, `draft`.



```
\includegraphics [width=0.5\textwidth] {koberec.pdf}%  
\includegraphics [height=1cm] {koberec.pdf}
```

Grafika

Grafika

```
\begin{center}  
\includegraphics[angle=90,totalheight=2cm]{box.pdf}  
\includegraphics[totalheight=2cm,angle=90]{box.pdf}  
\end{center}
```

Grafika

Grafika

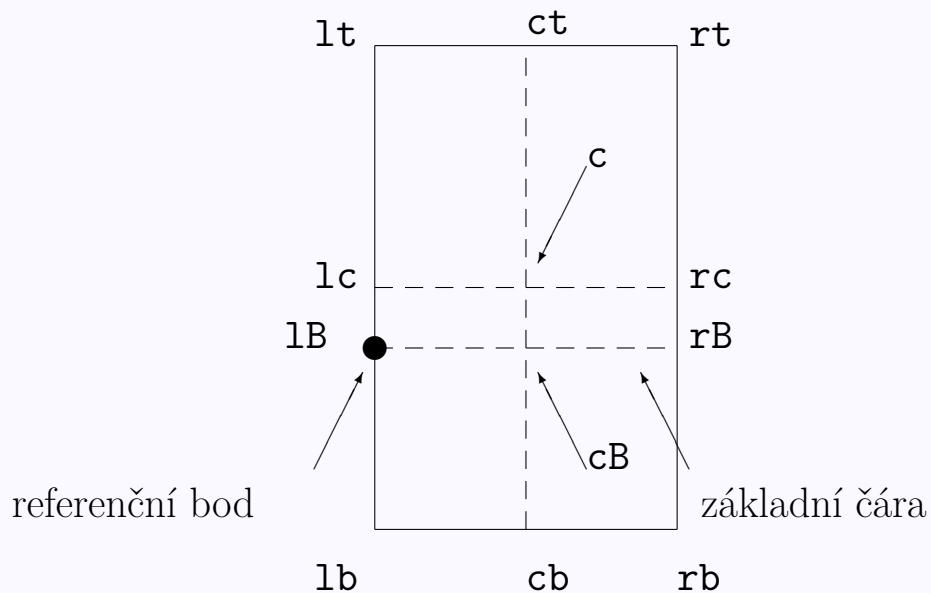
```
\begin{center}
\includegraphics [width=2cm] {box.pdf}
\hspace{1in}
\includegraphics [width=2cm, angle=-90] {box.pdf}
\end{center}
```

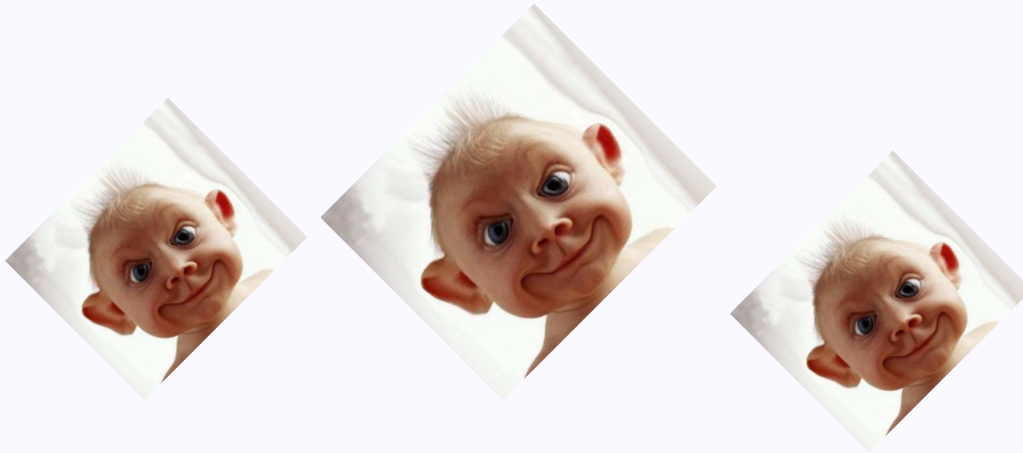
Grafika

Grafika

```
\begin{center}
\includegraphics [width=2cm] {box.pdf}
\hspace{1in}
\includegraphics [width=2cm, origin=br, angle=-90] {box.pdf}
\end{center}
```

## Možnosti volby středu otáčení





```
\includegraphics[angle=45,width=4cm]{anti.pdf}
```

```
\includegraphics[width=4cm,angle=45]{anti.pdf}
```

```
\includegraphics[angle=45,origin=c,width=4cm]{anti.pdf}
```



```
\noindent\includegraphics{a.pdf}%  
\hfill\includegraphics{a.pdf}
```



```
\noindent\hfill\includegraphics{a.pdf}%  
\hfill\includegraphics{a.pdf}\hspace*{\fill}
```





```
\begin{center}  
\begin{minipage}[b]{.5\textwidth}  
\centering  
\includegraphics[width=\textwidth]{anti.pdf}  
\end{minipage}%  
\hfill\begin{minipage}[b]{.5\textwidth}  
\centering  
\includegraphics[width=\textwidth]{anti.pdf}  
\end{minipage}  
\end{center}
```

## Vertikální srovnání prostředí minipage

Grafika

Grafika

```
\begin{center}
\begin{minipage}[b]{.25\linewidth}
\centering
\includegraphics[width=1.5cm]{box}
\end{minipage}%
\begin{minipage}[b]{.25\linewidth}
\centering
\includegraphics[width=1.5cm,angle=-45]{box}
\end{minipage}
\end{center}
```

Grafika

Grafika

```
\begin{center}
\begin{minipage}[t]{.25\linewidth}
\centering
\includegraphics[width=1.5cm]{box}
\end{minipage}%
\begin{minipage}[t]{.25\linewidth}
\centering
\includegraphics[width=1.5cm,angle=-45]{box}
\end{minipage}
\end{center}
```

## Srovnání „spodků“ prostředí minipage



Grafika



Grafika

```
\begin{center}
\begin{minipage}[b]{.25\linewidth}
\centering
\includegraphics[width=1in]{box}
\par\vspace{0pt}
\end{minipage}%
\begin{minipage}[b]{.25\linewidth}
\centering
\includegraphics[width=1in,angle=-45]{box}
\par\vspace{0pt}
\end{minipage}
\end{center}
```

## Srovnání „vršků“ prostředí minipage

Grafika

Grafika

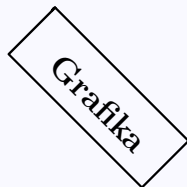
```
\begin{center}
\begin{minipage}[t]{.25\linewidth}
\vspace{0pt}
\centering
\includegraphics[width=1in]{box}
\end{minipage}%
\begin{minipage}[t]{.25\linewidth}
\vspace{0pt}
\centering
\includegraphics[width=1in,angle=-45]{box}
\par\vspace{0pt}
\end{minipage}
\end{center}
```

## Vložení stejného obrázku vícekrát

```
\newsavebox{\mujbox}
```

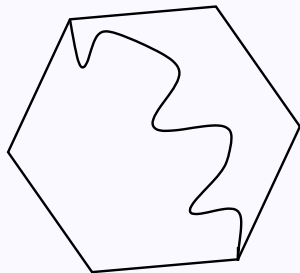
```
\sbox{\mujbox}{\includegraphics [width=1in] {box.pdf}}
```

Na místě, kam chceme obrázek umístit dáme `\usebox{\mujbox}`, úpravy provádíme příkazy `\scalebox`, `\resizebox` nebo `\rotatebox`.



```
\begin{center}  
\begin{minipage}[t]{.4\linewidth}  
\vspace{0pt}  
\centering  
\usebox{\mujbox}  
\end{minipage}%  
\begin{minipage}[t]{.4\linewidth}  
\vspace{0pt}  
\centering  
\rotatebox{-45}{\usebox{\mujbox}}  
\par\vspace{0pt}  
\end{minipage}  
\end{center}
```

## Zapouzdřený postscript (EPS)



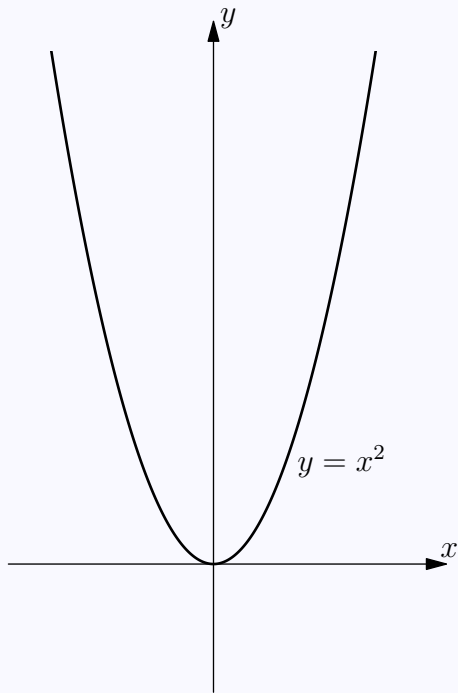
```
%!PS-Adobe-2.0 EPSF-2.0
%%Title: sest.eps
%%Creator: fig2dev Version 3.2
%%CreationDate: Sat Aug 31 20:17:51 2002
%%Orientation: Portrait
%% BoundingBox: 0 0 114 103
%%Pages: 0
%%BeginSetup
%%EndSetup
%%Magnification: 1.0000
%%EndComments
```

Čtyři čísla specifikující BoundingBox udávají souřadnice levého dolního a pravého horního rohu. V našem případě má levý dolní roh souřadnice (0, 0) a pravý horní roh (114, 103), tj. obrázek je 114 **bp** široký a 103 **bp** vysoký.

- **xfig** je volně dostupný (tzv. freeware) program pro UNIX/Xwindows. Lze v něm nakreslit obrázek, který bude importován ve formátu EPS.  
Manuál: <http://www.xfig.org/userman/>.  
Verze pro Windows: <http://www.schmidt-web-berlin.de/winfig/>.
- **ImageMagick** lze použít nejen pro konverzi obrázků z jednoho grafického formátu do jiného, ale i k úpravě velikosti, barev apod.  
Více informací včetně manuálu: <http://www.imagemagick.org/script/index.php>. Spustíme příkazem `display`.
- **Latexdraw**  
<http://latexdraw.sourceforge.net/>
- **Jpgfdraw**  
<http://theoval.cmp.uea.ac.uk/~nlct/jpgfdraw/>
- **Asymptote**  
<http://asymptote.sourceforge.net/>
- Metafont, Metapost, XYpix, MFpic, Inkscape...

# Asymptote

```
\usepackage[inline]{asymptote}
```



```
\begin{asy}[width=6cm]
import graph;
size(10cm,0);
real xmin=-4,xmax=4;
real ymin=-2,ymax=10;
real f(real x) {return x^2;}
draw(graph(f,xmin,xmax,n=400),
      linewidth(1bp));
label("$y=x^2$", (2.5,2));
ylimits(-2.5,10,Crop);
xaxis(Label("$x$",position=EndPoint,
           align=NE),Arrow);
yaxis(Label("$y$",position=EndPoint,
           align=NE),Arrow);
\end{asy}
```

Pro kompilaci grafiky použijeme posloupnost příkazů

```
pdflatex -interaction=nonstopmode dokument.tex
```

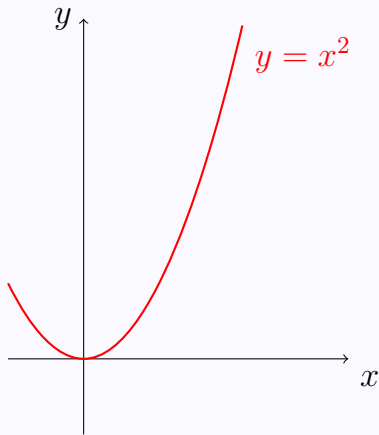
```
asy -batchView dokument-*.asy
```

```
pdflatex -interaction=nonstopmode dokument.tex
```



## Tikz

```
\usepackage{pgf,tikz}
\usetikzlibrary{arrows}
```



```
\begin{tikzpicture}[domain=0:2]
\draw[->] (-1,0) -- (3.5,0)
node[below right] {$x$};
\draw[->] (0,-1) -- (0,4.5)
node[left] {$y$};
\draw[red,thick] (-1,1)
parabola bend (0,0) (2.1,4.41)
node[below right] {$y=x^2$};
\end{tikzpicture}
```

Tikz/PGF: <http://www.texample.net/tikz/examples/>

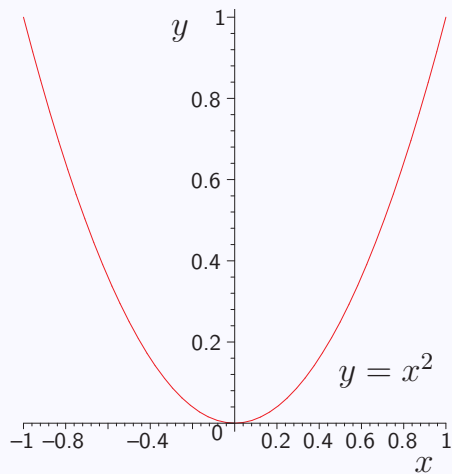
Editor Jpgfdraw: <http://theoval.cmp.uea.ac.uk/~nlct/jpgfdraw/>

## Pgfplot

<http://pgfplots.sourceforge.net/>

## Eps2pgf

```
\usepackage{pgf,tikz}
```

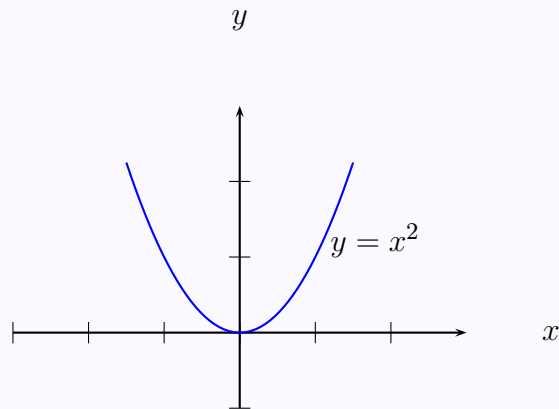


```
\begin{center}  
\input par.pgf  
\end{center}
```

<http://www.texample.net/tikz/examples/eps2pgf/>

## Pspicture

```
\usepackage[pstricks]{pst-pdf}  
\usepackage{pstricks-add, pst-plot, pst-func}
```



```
\begin{pspicture*(-4,-4)(5,5)  
  \psaxes[labelsep=1cm, labels=none]  
    {->}(0,0)(-3,-1)(3,3)[$x$,0][$y$,90]  
  \psPolynomial [coeff =0 0 1 0,  
    linecolor = blue ]{ -1.5}{1.5}  
  \rput [bl](1.2,1){$y=x^2$}  
\end{pspicture*}
```

Použití s pdfL<sup>A</sup>T<sub>E</sub>Xem:

```
latex document.tex
```

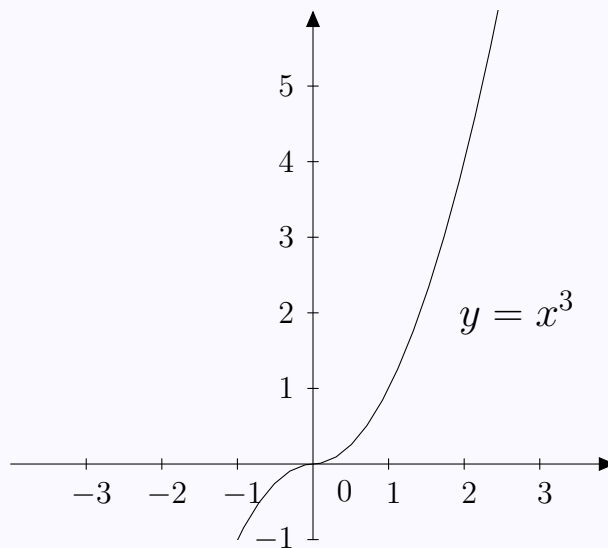
```
dvips -o document-pics.ps document.dvi
```

```
ps2pdf document-pics.ps
```

```
pdflatex document.tex
```

Editor Latexdraw: <http://latexdraw.sourceforge.net/>

## Geogebra



<http://www.geogebra.org/cms/cz>

Umožňuje export do Asymptote, Tikz i Pstricks.