

# 3D grafika pomocí Asymptote

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INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

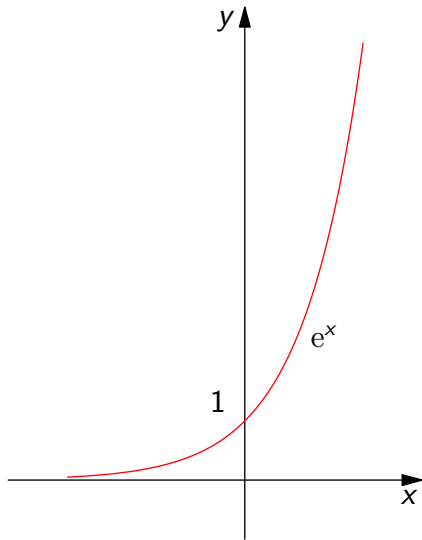
Do preambule dokumentu načtení balíčku

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

Nyní můžeme použít prostředí asy a do něj umístit zdrojový kód obrázku. Druhou možností je načtení kódu ze samostatného souboru pomocí příkazu `\asyinclude`.

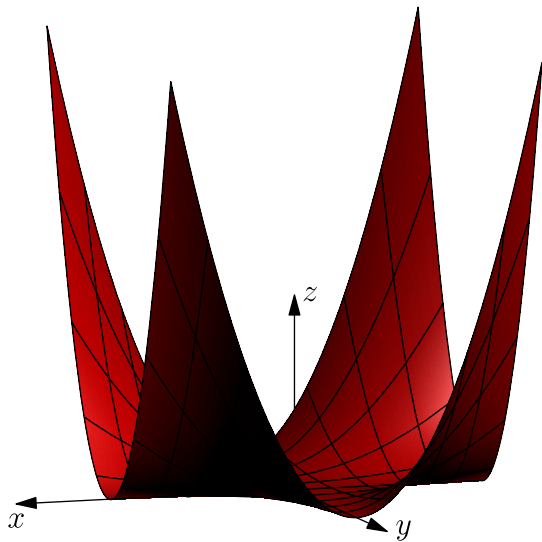
Pro kompilaci dokumentu s grafikou pak použijeme

```
pdflatex dokument.tex  
asy dokument-*.asy  
pdflatex dokument.tex
```



```
\begin{asy}
import graph;
size (200);
real f( real x){
return exp(x);
}
draw(graph (f,-3,2),red );
xaxis("$x$",-4,3, Arrow );
yaxis("$y$",-1,8, Arrow );
labely("$1$",1,NW);
label("$\mathrm {e}^ x$",%
(1,f(1)),SE);
\end{asy}
```

# Funkce dvou proměnných



```
\begin{asy}
import graph3;

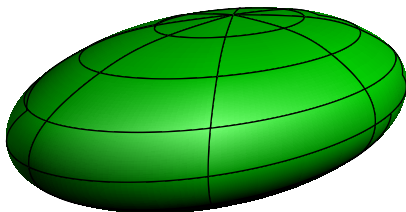
size(200,200,keepAspect = false);
currentprojection = orthographic (3,9,5);

real f(pair z){
    real x=z.x,y=z.y;
    return abs(x*y)^2;
}

draw(surface(f,(-2,-2),(2 ,2),xsplinetype = Spline),
red,meshpen = black+0.5);

xaxis3("$x$",-2,3, Arrow3);
yaxis3("$y$",-2,3, Arrow3);
zaxis3("$z$",0,7, Arrow3);
\end{asy}
```

# Plochy dané parametricky

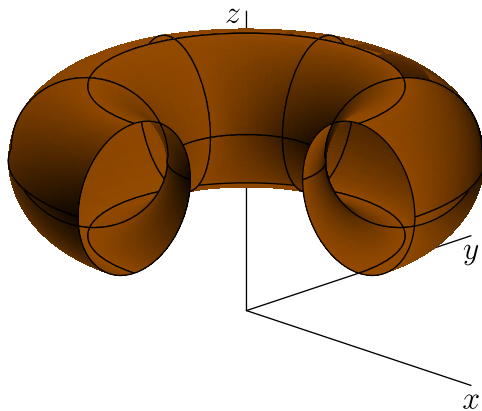


```
\begin{asy}
import graph3;

size(150,0);
real a=3,b=2,c=1;

triple F(pair z){
real phi=z.x, theta=z.y;
return (a*cos(phi)*cos(theta),
b*cos(phi)*sin(theta),
c*sin(phi));
}
draw(surface(F,(-pi/2,0),(pi/2,2pi),nu =8,Spline),green,
meshpen = black +0.5);
\end{asy}
```

# Rotační tělesa





```
\begin{asy}
import solids;

size(0,150);
currentprojection = orthographic (2,-2,1);

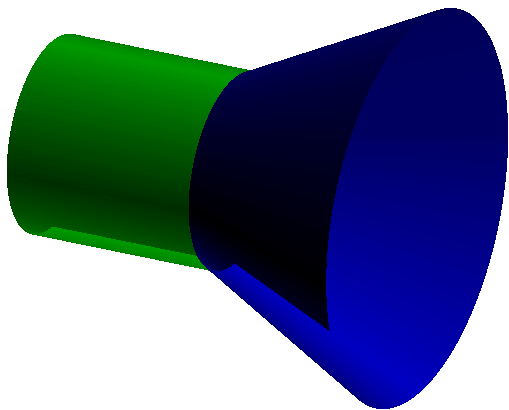
path3 p = rotate (90,(1,0,0))*shift(2,2,0)*unitcircle3;

revolution r=revolution (p,0,270);

draw(surface(r,n=5),orange,meshpen = black+0.5);

xaxis3("$x$",0,4);
yaxis3("$y$",0,4);
zaxis3("$z$",0,4);
\end{asy}
```

## „Vytažené“ plochy



```
\begin{asy}
import three;

size(0,150) ;
currentprojection = orthographic(1,-2,1);

// dve kruznice
path3 p = rotate(90,(0,1,0))*unitcircle3;
path3 q = shift((2,0,0))*scale3 (2)*p;

draw(extrude(p,(-2 ,0,0)),green);
draw(extrude(p,q),blue);
\end{asy}
```