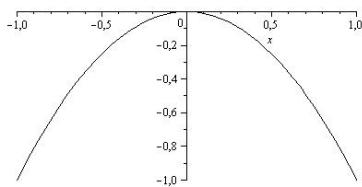


# Grafy funkcí dvou proměnných

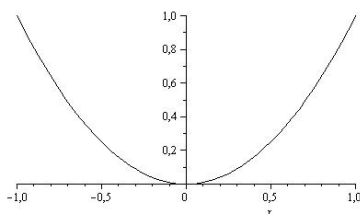
## Některé základní plochy

1.  $f(x, y) = x^2 - y^2$  (Hyperbolický paraboloid)

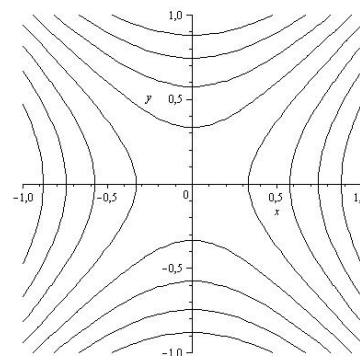
a) Řez rovinou  $yz$ ,  
tj.  $x = 0$



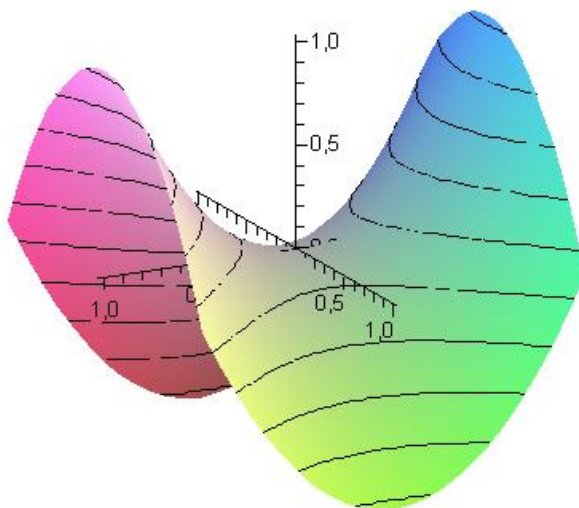
b) Řez rovinou  $xz$ ,  
tj.  $y = 0$



c) Vrstevnice (tj. křivky  $f(x, y) = c$ ) zobrazené do roviny  $xy$

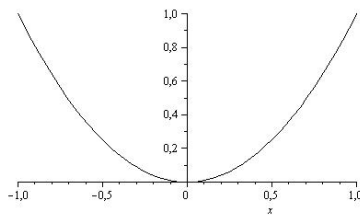


d) Graf  $f(x, y) = x^2 - y^2$

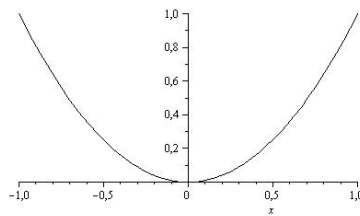


2.  $f(x, y) = x^2 + y^2$  (Rotační paraboloid)

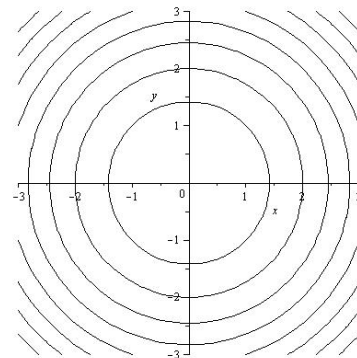
a) Řez rovinou  $yz$ ,  
tj.  $x = 0$



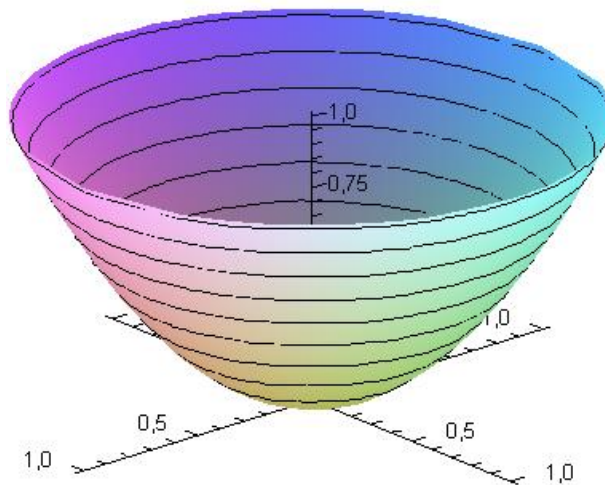
b) Řez rovinou  $xz$ ,  
tj.  $y = 0$



c) Vrstevnice (tj. křivky  
 $f(x, y) = c$ ) zobra-  
zené do roviny  $xy$



d) Graf  $f(x, y) = x^2 + y^2$

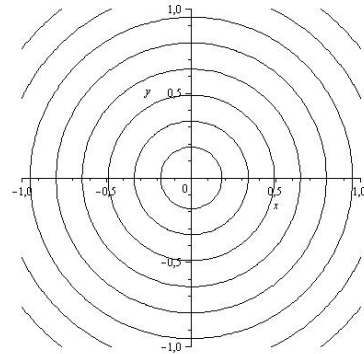
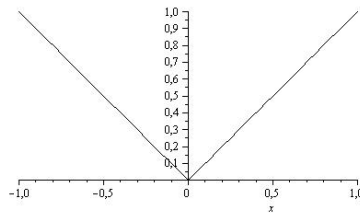
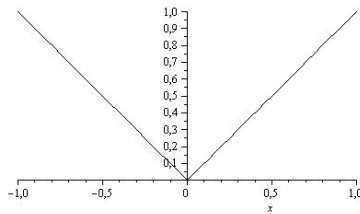


3.  $f(x, y) = \sqrt{x^2 + y^2}$  (Kružková plocha (část))

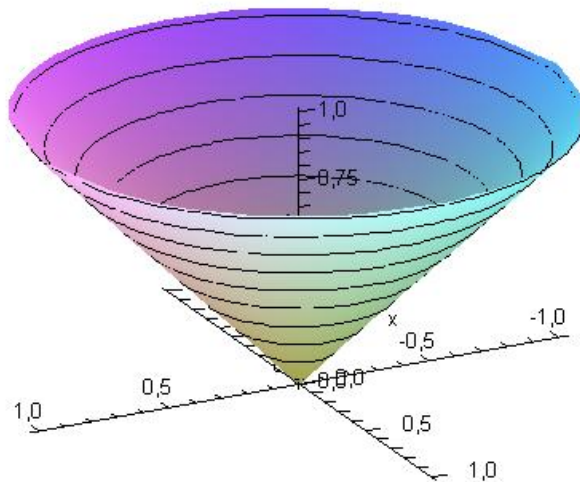
a) Řez rovinou  $yz$ ,  
tj.  $x = 0$

b) Řez rovinou  $xz$ ,  
tj.  $y = 0$

c) Vrstevnice (tj. křivky  
 $f(x, y) = c$ ) zobra-  
zené do roviny  $xy$

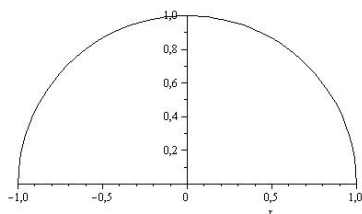


d) Graf  $f(x, y) = \sqrt{x^2 + y^2}$

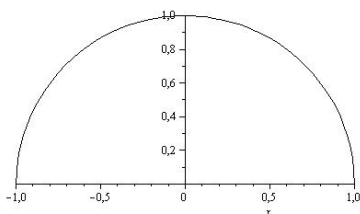


4.  $f(x, y) = \sqrt{1 - x^2 - y^2}$  (Kulová plocha (část))

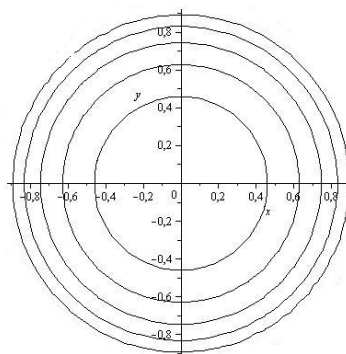
a) Řez rovinou  $yz$ ,  
tj.  $x = 0$



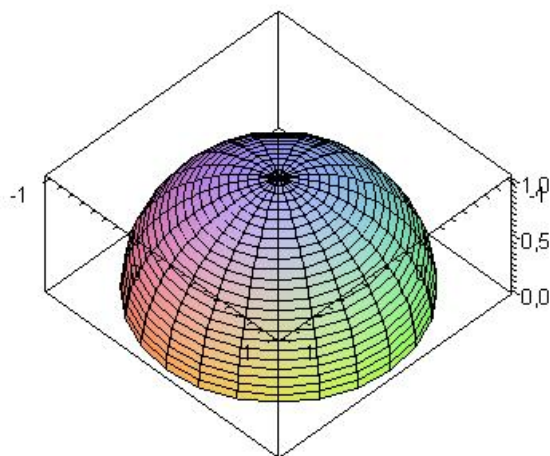
b) Řez rovinou  $xz$ ,  
tj.  $y = 0$



c) Vrstevnice (tj. křivky  
 $f(x, y) = c$ ) zobra-  
zené do roviny  $xy$

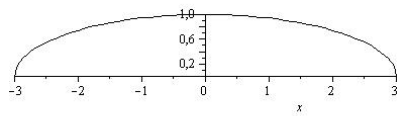


d) Graf  $f(x, y) = \sqrt{1 - x^2 - y^2}$

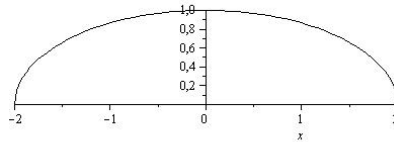


5.  $f(x, y) = \sqrt{1 - \frac{x^2}{4} - \frac{y^2}{9}}$  (Elipsoid (část))

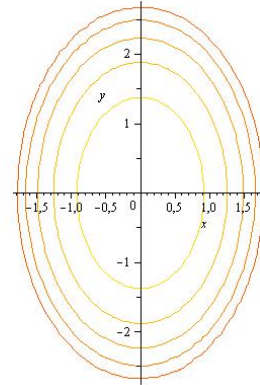
a) Řez rovinou  $yz$ ,  
tj.  $x = 0$



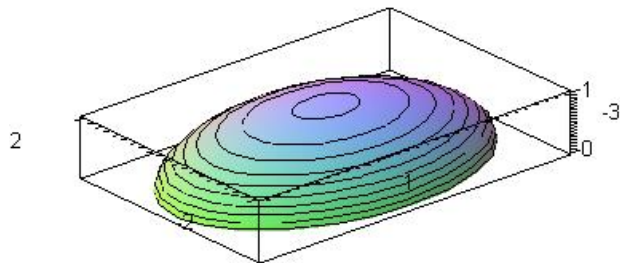
b) Řez rovinou  $xz$ ,  
tj.  $y = 0$



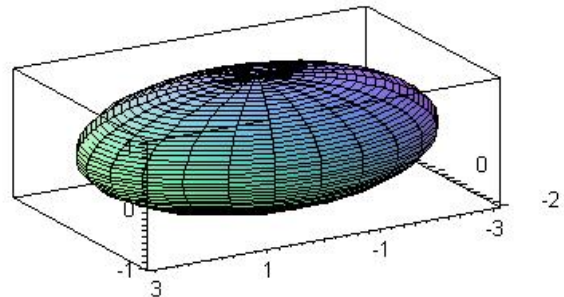
c) Vrstevnice (tj. křivky  $f(x, y) = c$ ) zobrazené do roviny  $xy$



d) Graf  $f(x, y) = \sqrt{1 - \frac{x^2}{4} - \frac{y^2}{9}}$

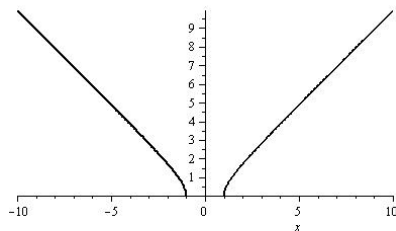


e) Graf  $\frac{x^2}{4} + \frac{y^2}{9} + z^2 = 1$  (Elipsoid)

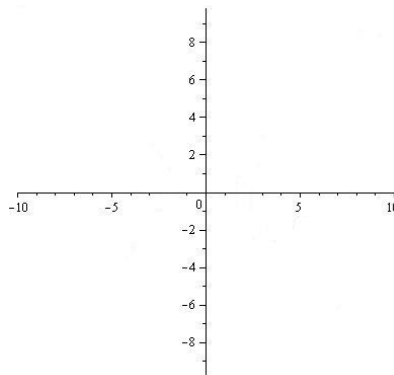


6.  $f(x, y) = \sqrt{x^2 - y^2 - 1}$  (Dvojdílný hyperboloid (část))

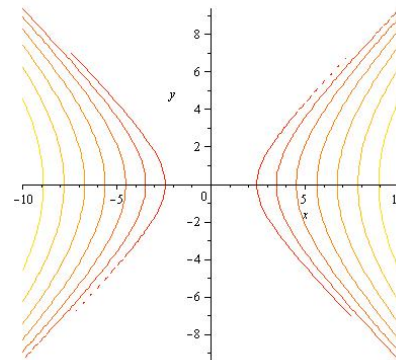
a) Řez rovinou  $yz$ ,  
tj.  $x = 0$



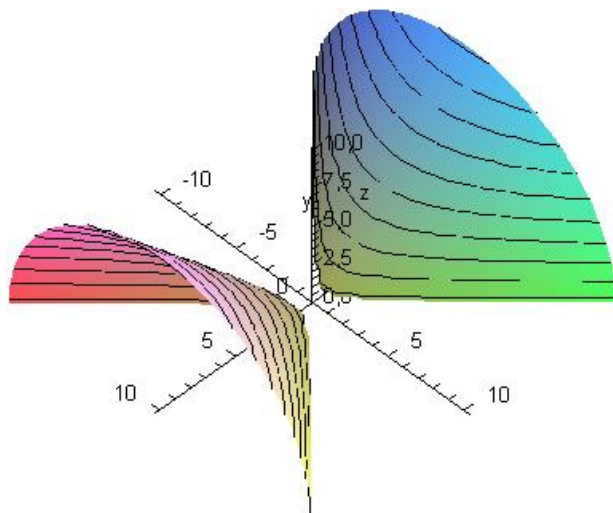
b) Řez rovinou  $xz$ ,  
tj.  $y = 0$



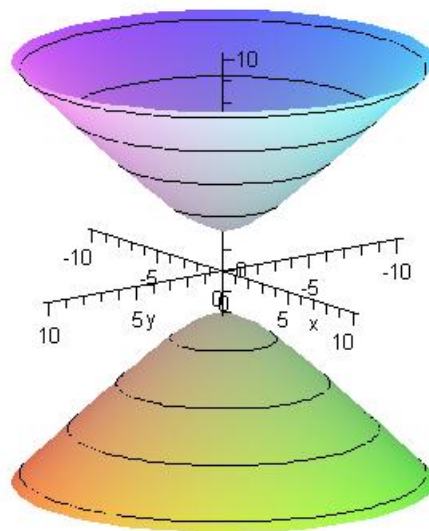
c) Vrstevnice (tj. křivky  $f(x, y) = c$ ) zobrazené do roviny  $xy$



d) Graf  $f(x, y) = \sqrt{x^2 - y^2 - 1}$

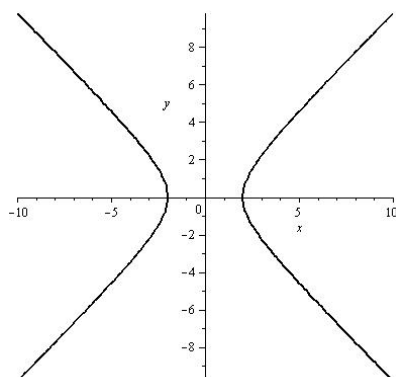


e) Graf  $-\frac{x^2}{4} - \frac{y^2}{4} + \frac{z^2}{4} = 1$  (Dvojdílný hyperboloid)

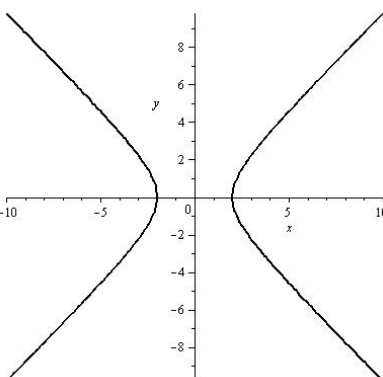


7.  $f(x, y) = \sqrt{x^2 + y^2 - 1}$  (Jednodílný hyperboloid (část))

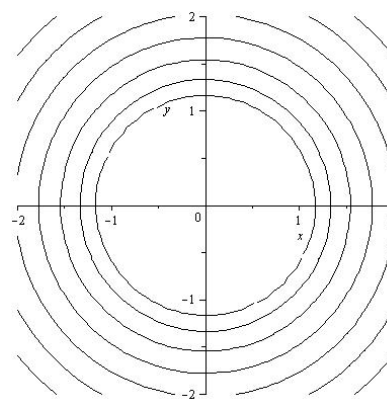
a) Řez rovinou  $yz$ ,  
tj.  $x = 0$



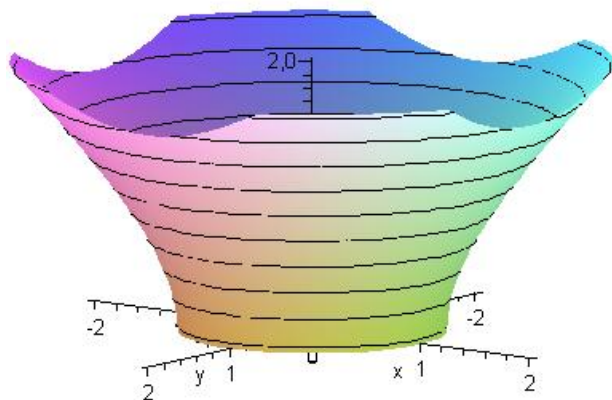
b) Řez rovinou  $xz$ ,  
tj.  $y = 0$



c) Vrstevnice (tj. křivky  $f(x, y) = c$ ) zobrazené do roviny  $xy$



d) Graf  $f(x, y) = \sqrt{x^2 + y^2 - 1}$



e) Graf  $x^2 + y^2 - z^2 = 1$  (Jednodílný hyperboloid)

