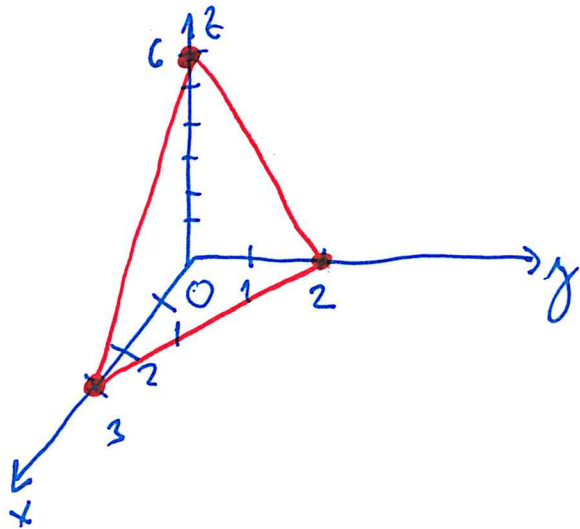


Funkce dvou proměnných - příklady

$$z = f(x, y)$$

lineární: $z = ax + by + c$, $a, b, c \in \mathbb{R}$
grafem je rovina

příklad: $z = 6 - 2x - 3y$



průsečíky s osami

s osou x : $y = z = 0$

$$z = 6 - 2x - 3y = 0$$

$$0 = 6 - 2x$$

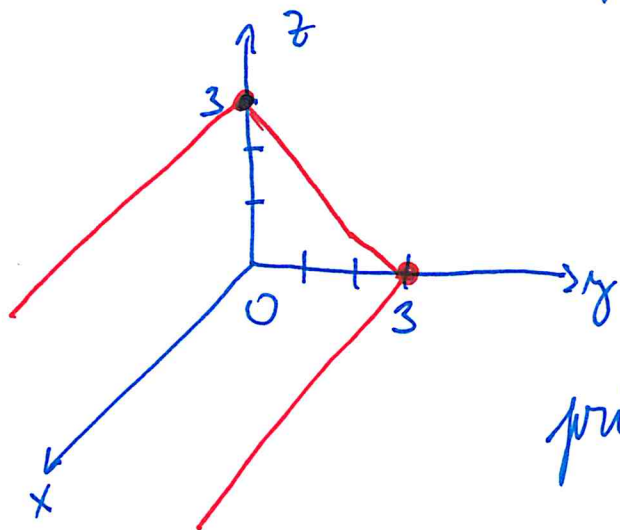
$$\underline{x = 3}$$

s osou y : $x = z = 0$

$$0 = 6 - 3y \rightarrow \underline{y = 2}$$

s osou z : $x = y = 0 \rightarrow \underline{z = 6}$

$$z = 3 - y$$

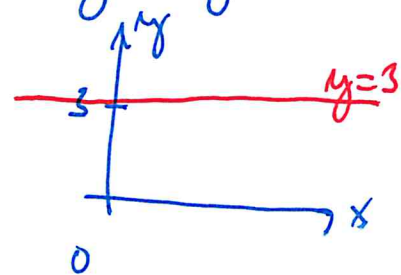


průsečík s osou z : $x=0, y=0 \rightarrow \underline{z=3}$

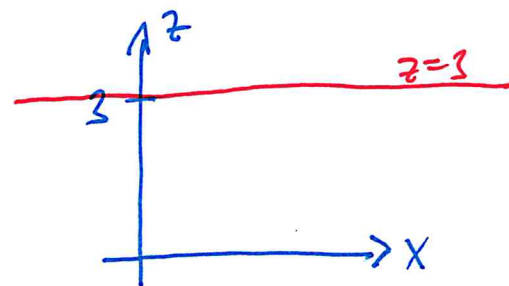
s osou y : $x=0, z=0 \rightarrow 0=3-y \rightarrow \underline{y=3}$

s osou x : $y=0, z=0 \rightarrow 0=3 \emptyset \rightarrow$ nemá průsečík s osou x

průsečík s rovinou xy : $z=0 \rightarrow 0=3-y \rightarrow y=3$

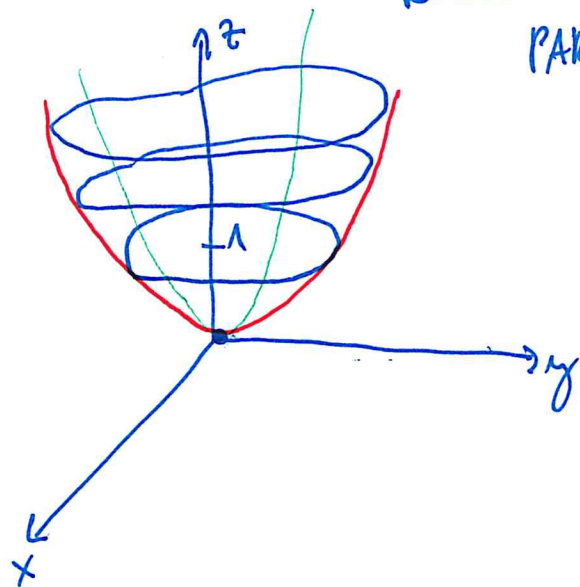


průsečík s rovinou xz : $y=0 \rightarrow \underline{z=3}$



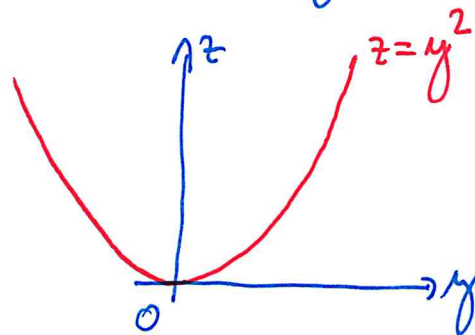
$$f(x,y) = x^2 + y^2 = z$$

ROTAČNÍ
PARABOLOID



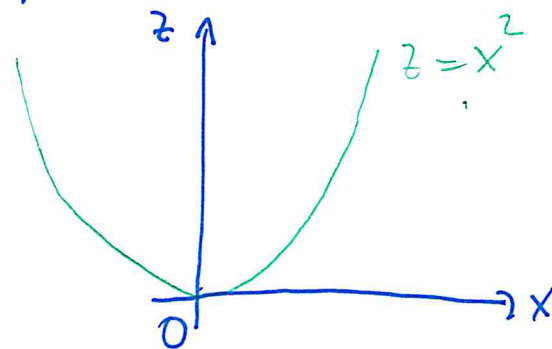
průsečík s yz : $x=0$

$$f(0,y) = 0^2 + y^2 = y^2 = z$$



průsečík s xz : $y=0$

$$f(x,0) = x^2 + 0^2 = x^2 = z$$



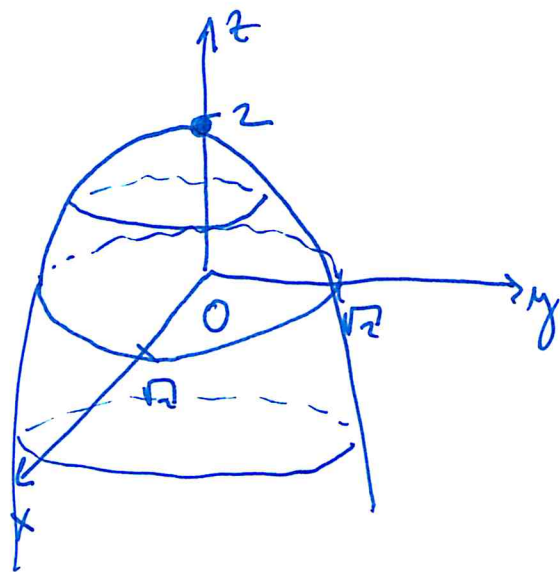
průsečík s xy : $z=0$

$$x^2 + y^2 = 0 \rightarrow [0,0]$$

průsečík s rovinou $z=1$

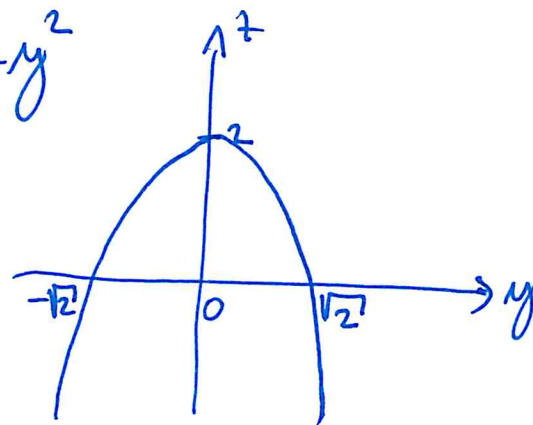
$$x^2 + y^2 = 1 \text{ - kružnice}$$

$$z = 2 - x^2 - y^2$$



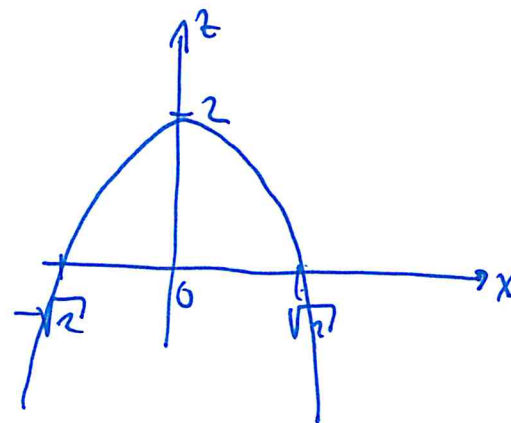
průřez s yz : $x=0$

$$z = 2 - y^2$$



s xz : $y=0$

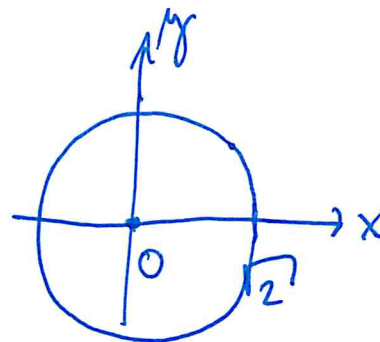
$$z = 2 - x^2$$



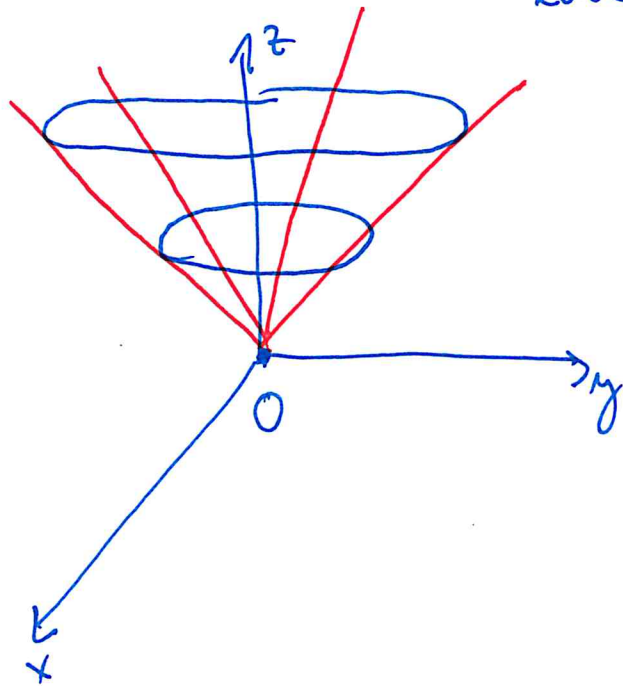
s xy : $z=0$

$$0 = 2 - x^2 - y^2$$

$$x^2 + y^2 = 2$$



$$z = \sqrt{x^2 + y^2}$$



kuželová
plocha

průřez $z=1$

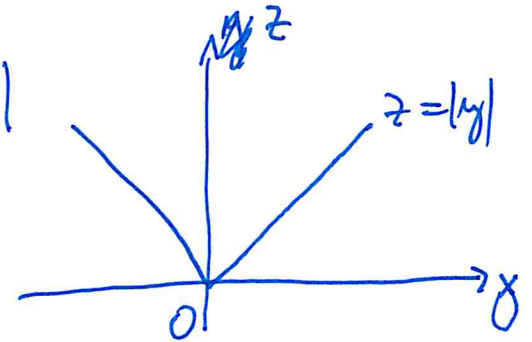
$$\sqrt{x^2 + y^2} = 1$$

$$x^2 + y^2 = 1$$

průřez s yz : $x=0$

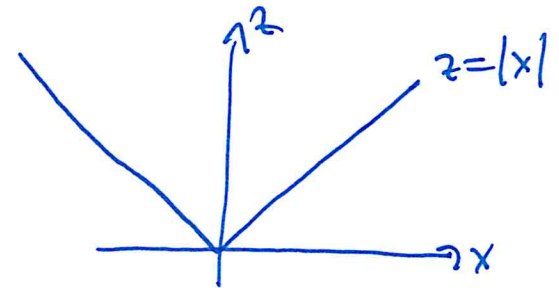
$$z = \sqrt{y^2}$$

$$z = |y|$$



průřez s xz : $y=0$

$$z = \sqrt{x^2} \rightarrow z = |x|$$



koule je těleso : $S = [0, 0, 0], R : x^2 + y^2 + z^2 \leq R^2$

sféra je plocha - povrch koule : $x^2 + y^2 + z^2 = R^2$

$$R = 1 : x^2 + y^2 + z^2 = 1$$

$$z^2 = 1 - x^2 - y^2$$

$$z = \sqrt{1 - x^2 - y^2}$$

- graf je horní polokoule

$$z = -\sqrt{1 - x^2 - y^2}$$

- graf je dolní polokoule

