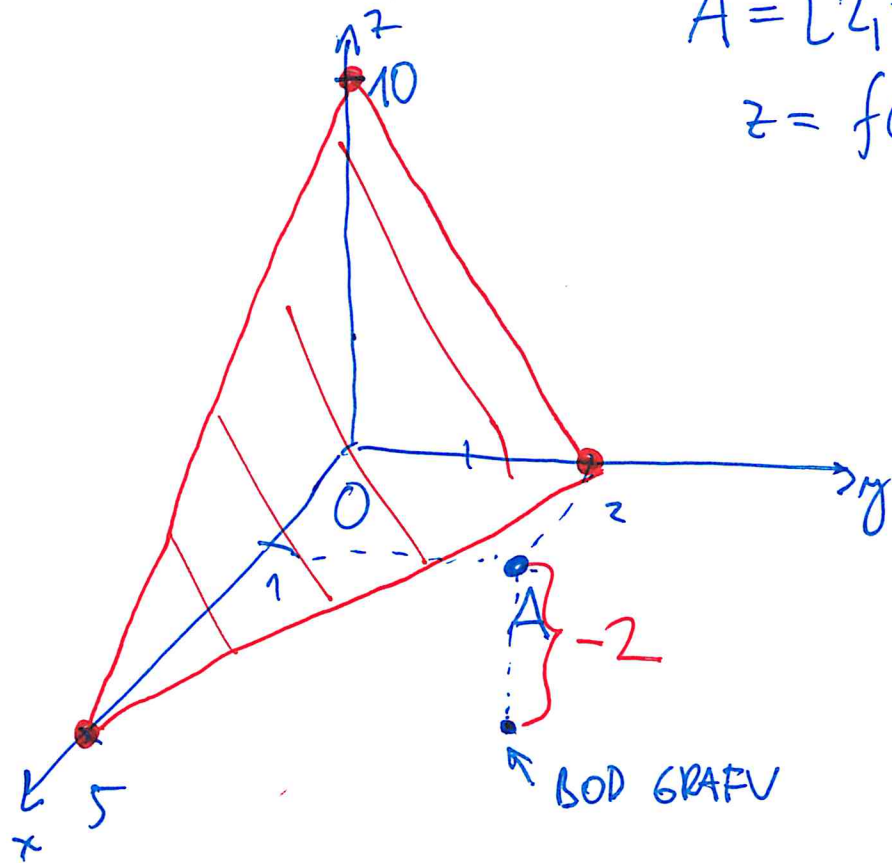


$$z = 10 - 2x - 5y$$



$$A = [2, 1]$$

$$z = f(x, y) = 10 - 2x - 5y = 10 - 2 - 10 = -2$$

Prüfungsskizze

Skizze x: $y=0, z=0$

$$0 = 10 - 2x \rightarrow x = 5$$

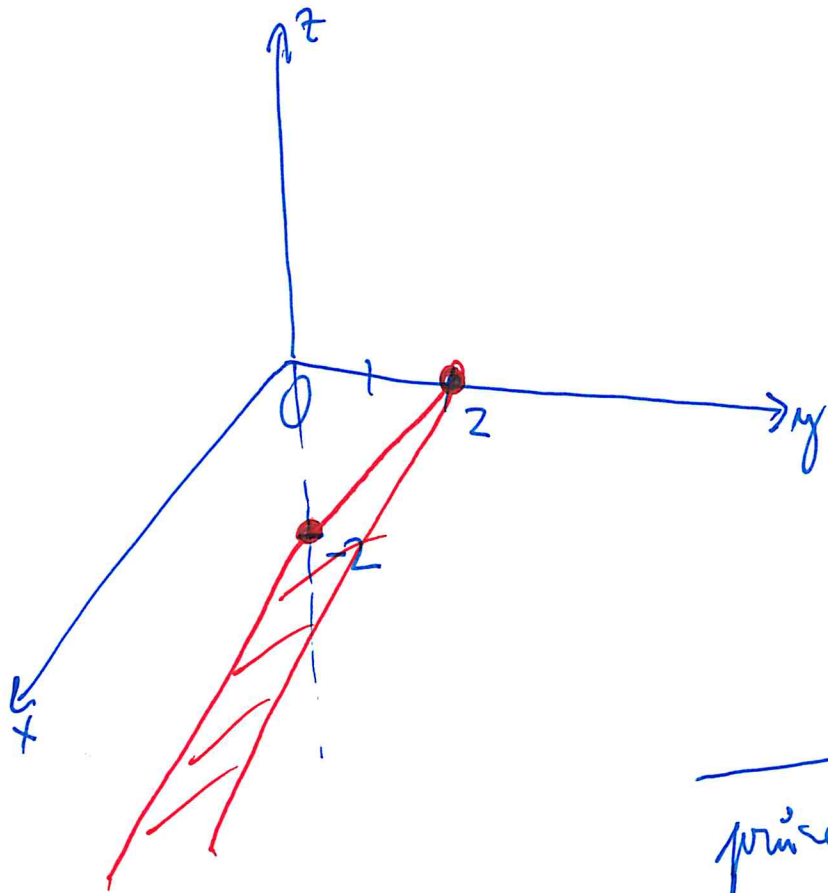
Skizze y: $x=0, z=0$

$$0 = 10 - 5y \rightarrow y = 2$$

Skizze z: $x=0, y=0$

$$z = 10$$

$$z = y - 2 = f(x, y)$$



průsečík s osou y : $x=0, z=0$

$$0 = y - 2 \rightarrow y = 2$$

s osou z : $x=0, y=0$

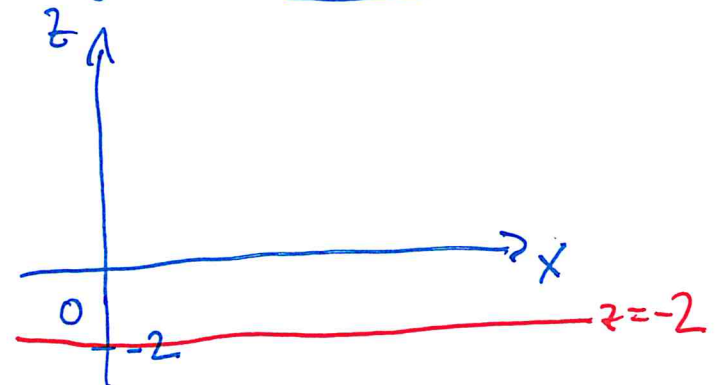
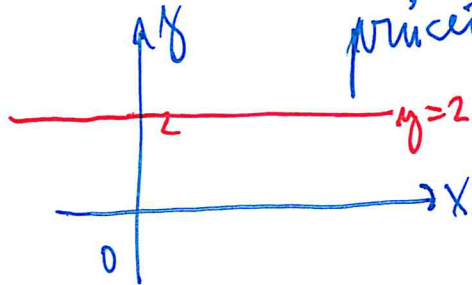
$$z = -2$$

s osou x : $y=0, z=0$ NENÍ
 $0 = -2 \neq$

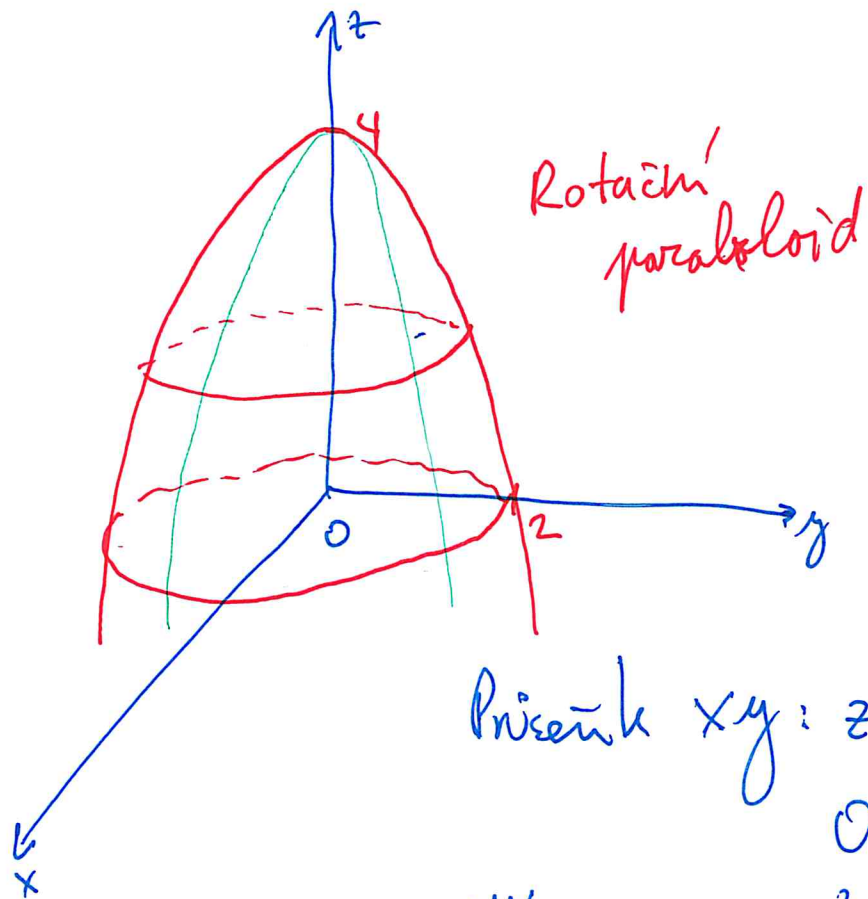
průsečík s rovinou xz : $y=0 \rightarrow \underline{z = -2}$

průsečík s xy : $z=0$

$$0 = y - 2 \rightarrow y = 2$$

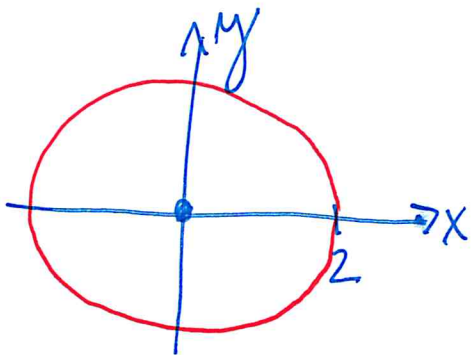


$$z = 4 - x^2 - y^2$$



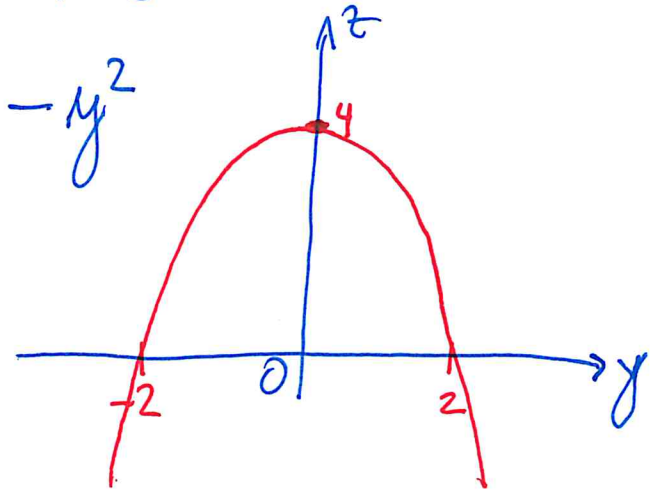
Rotáčn^í
paraboloid

Průřez xy : $z=0$
 $0 = 4 - x^2 - y^2$
 $x^2 + y^2 = 4$



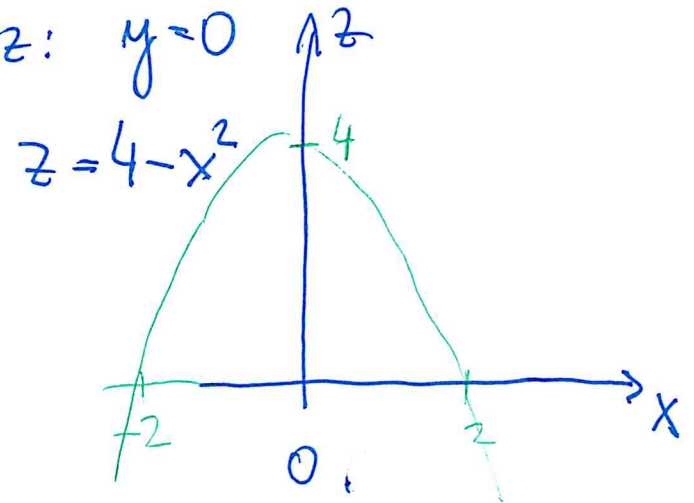
Průřez s rovinou yz : $x=0$

$$z = 4 - y^2$$



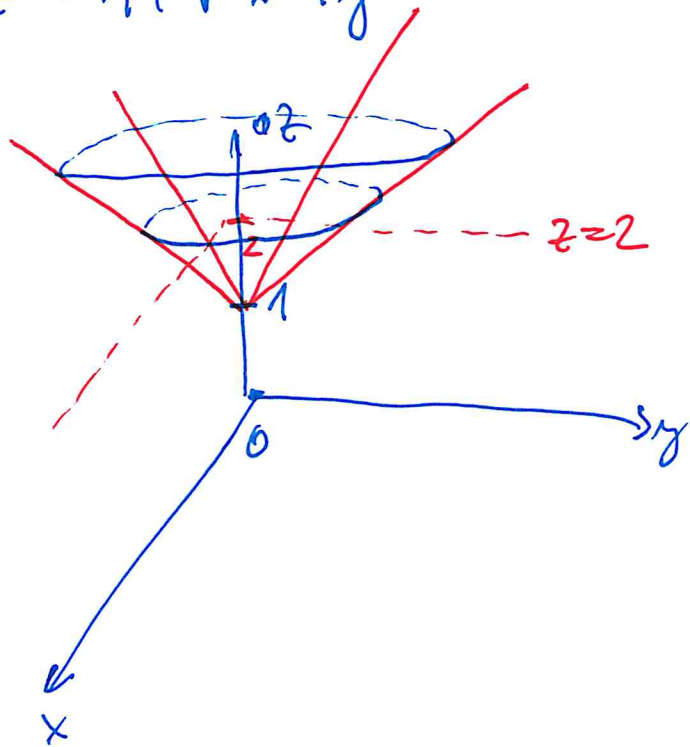
Průřez s rovinou xz : $y=0$

$$z = 4 - x^2$$



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

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



průřez s rovinou $z=2$

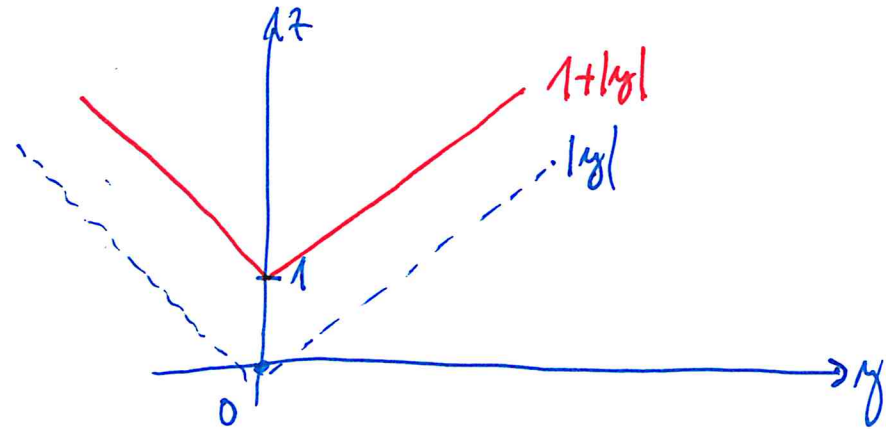
$$2 = 1 + \sqrt{x^2 + y^2}$$

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

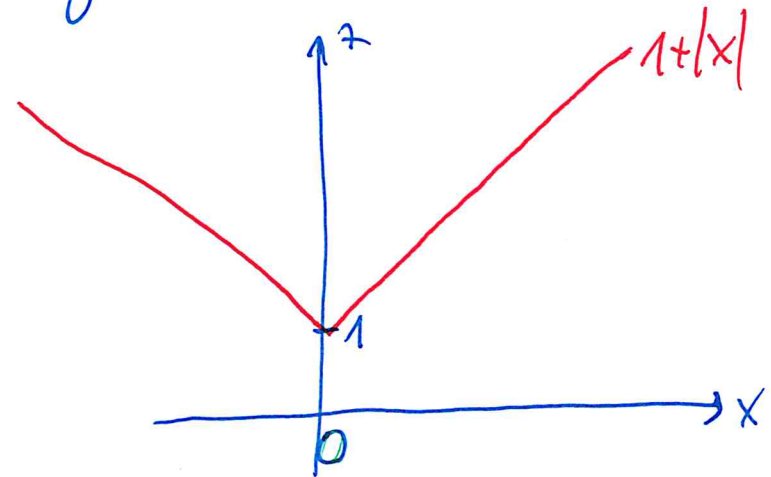
$$1 = x^2 + y^2 \quad \text{ kružnice }$$

rovina yz : $x=0$

$$z = 1 + \sqrt{y^2} = 1 + |y|$$



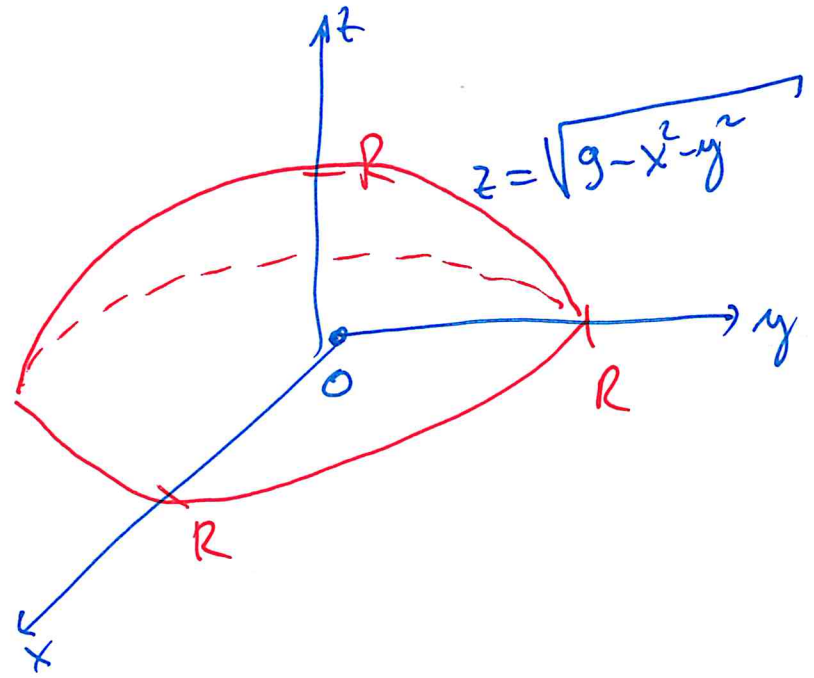
rovina xz : $y=0$: $z = 1 + \sqrt{x^2} = 1 + |x|$



$$z = \sqrt{9 - x^2 - y^2} \quad / \quad ^2 \rightarrow \text{horní polokoule}$$

$$z^2 = 9 - x^2 - y^2$$

$$x^2 + y^2 + z^2 = 9 \rightarrow \text{sféra o poloměru 3}$$



$$f_1(x,y) = x^3 y - 5y^2$$

$$f_2(x,y) = x \cdot \cos(xy)$$

$$\frac{\partial f_1}{\partial x} = y \cdot 3x^2 = 3x^2 y$$

$$\frac{\partial f_2}{\partial x} = \cos(xy) - x \sin(xy) y$$

$$\frac{\partial f_1}{\partial y} = x^3 \cdot 1 - 10y$$

$$\frac{\partial f_2}{\partial y} = -x \sin(xy) x = -x^2 \sin(xy)$$

$$h_2(x,y) = x^2 \ln(xy)$$

gradient $\nabla A = [e, 1]$

$$\frac{\partial h_2}{\partial x} = 2x \ln(xy) + x^2 \frac{1}{xy} \cdot y = 2x \ln(xy) + x \quad \frac{\partial h_2(A)}{\partial x} = 2e + e = 3e$$

$$\frac{\partial h_2(A)}{\partial y} = e^2$$

$$\frac{\partial h_2}{\partial y} = x^2 \frac{1}{xy} x = \frac{x^2}{y}$$

$$\text{grad } h_2 = \left(\frac{\partial h_2(A)}{\partial x}, \frac{\partial h_2(A)}{\partial y} \right) = \underline{\underline{(3e, e^2)}}$$