Graf funkce $f: (x,y) \mapsto f(x,y)$ je plocha o rovnici $z = f(x,y)$, $(x,y) \in D_f$

je množina $\{[x, y, f(x,y)] : (x,y) \in D_f\}$

(hladina)
Vrstevnice funkce $f: (x,y) \mapsto f(x,y)$ je křivka o rovnici $f(x,y) =$ konstanta

Pravá stěna : $x = 1$

Levá přední stěna : $y = 0$

$$z = \frac{x+2y}{x^2+y^2+1} = f(x,y)$$

$$f(1,y) = \frac{1+2y}{y^2+2}$$

$$f(x,0) = \frac{x}{x^2+1}$$

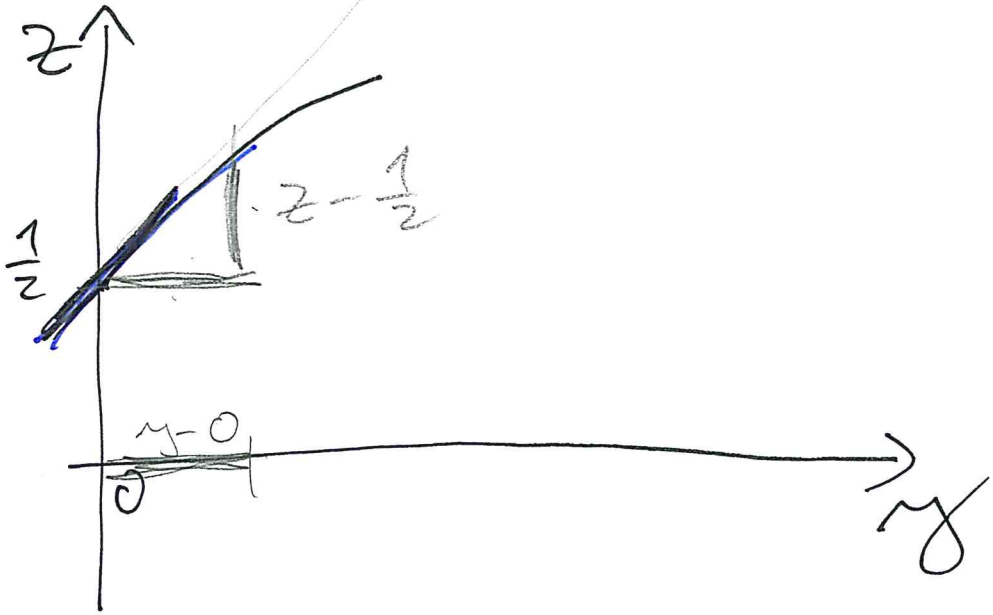
} parciální funkce

$$\frac{\partial f}{\partial x} = \frac{1\cdot(x^2+y^2+1) - (x+2y)\cdot 2x}{(x^2+y^2+1)^2} = \frac{-x^2+y^2-4xy+1}{(x^2+y^2+1)^2}$$

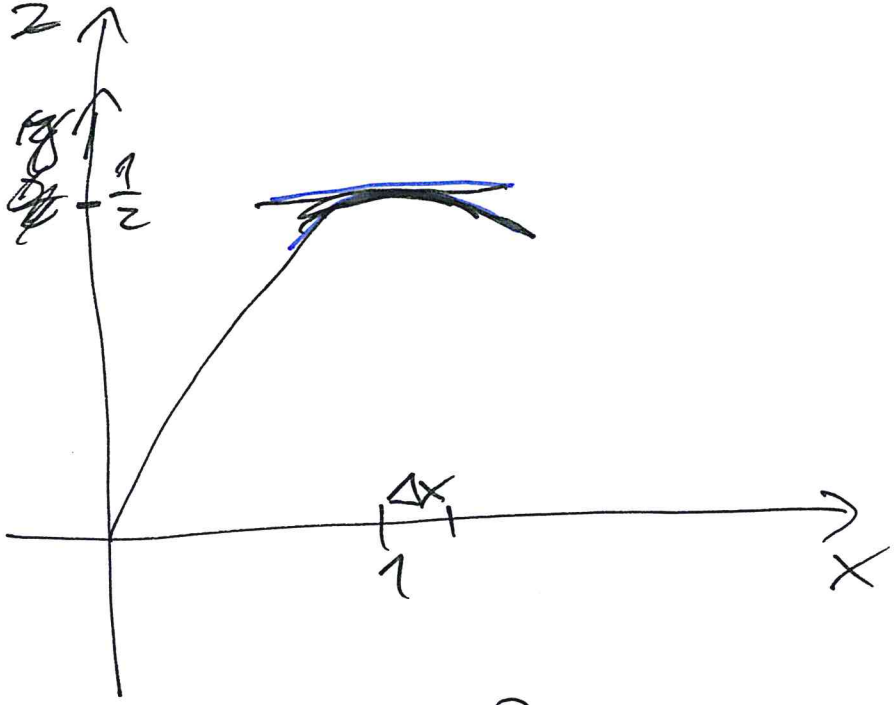
$$\frac{\partial f}{\partial y} = \frac{2(x^2+y^2+1) - (x+2y)\cdot 2y}{(x^2+y^2+1)^2} = \frac{2x^2-2xy-2y^2+2}{(x^2+y^2+1)^2}$$

$$\frac{\partial f}{\partial x}(1,0) = \boxed{0}$$

$$\frac{\partial f}{\partial y}(1,0) = \boxed{1}$$

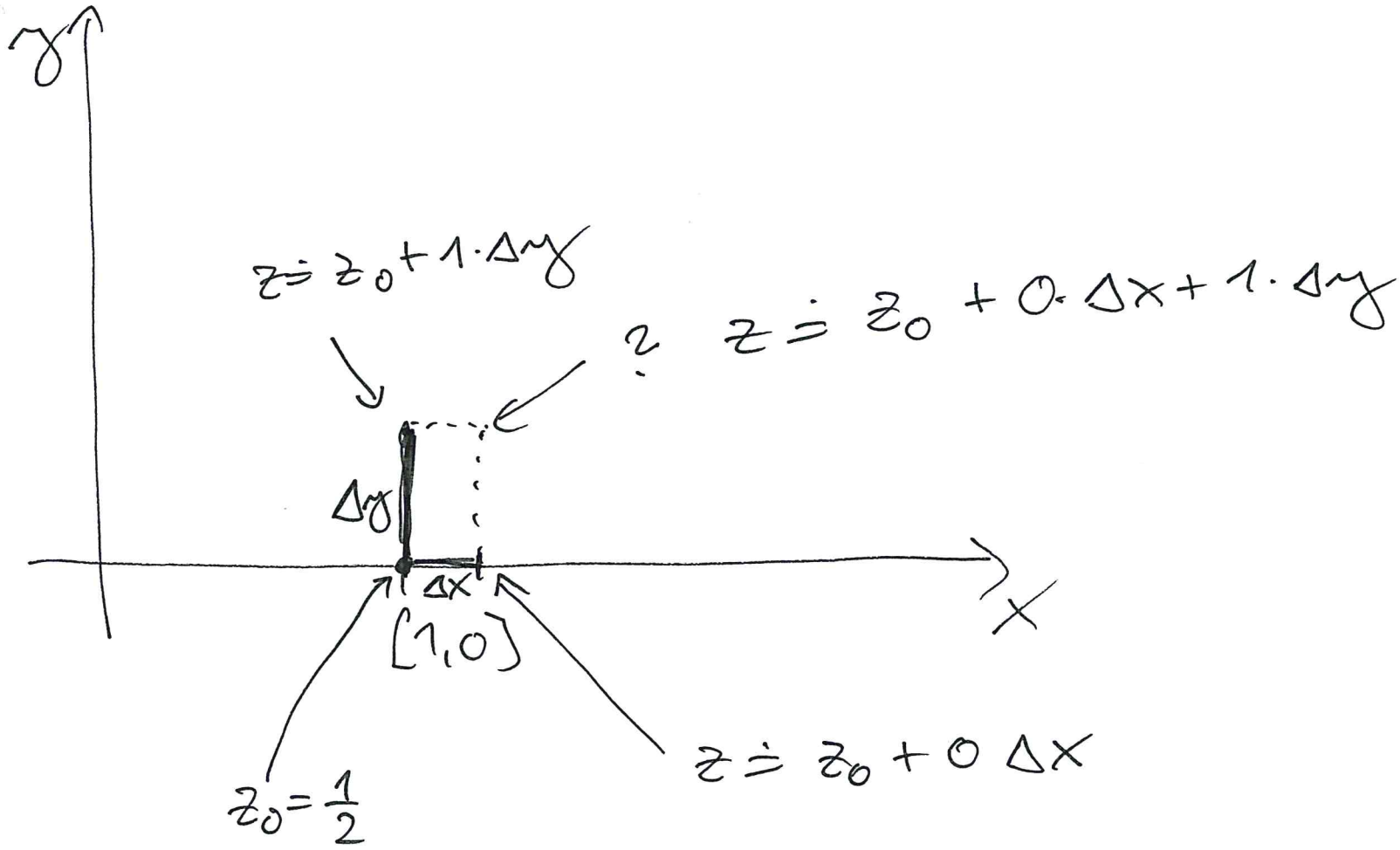


$$z = \frac{1}{2} + \boxed{1}\,(y-0)$$



$$\Delta z = 0$$

$$z = \frac{1}{2} + \boxed{0}\,(x-1)$$



Rovnice tečné roviny v bodě $[x_0, y_0]$

$$z = z_0 + a(x - x_0) + b(y - y_0)$$

$$z_0 = f(x_0, y_0)$$

$$a = \frac{\partial f}{\partial x}(x_0, y_0)$$

$$b = \frac{\partial f}{\partial y}(x_0, y_0)$$