

$f: \mathbb{R}^2 \rightarrow \mathbb{R}, A \in \mathbb{R}^2, f(A) \in \mathbb{R}$

$\text{grad } f: \mathbb{R}^2 \rightarrow \mathbb{R}^2, \text{grad } f(A) \in \mathbb{R}^2$

$D_v f(A)$  je derivace funkce  $f$  v bodě  $A$  podle vektoru  $v$

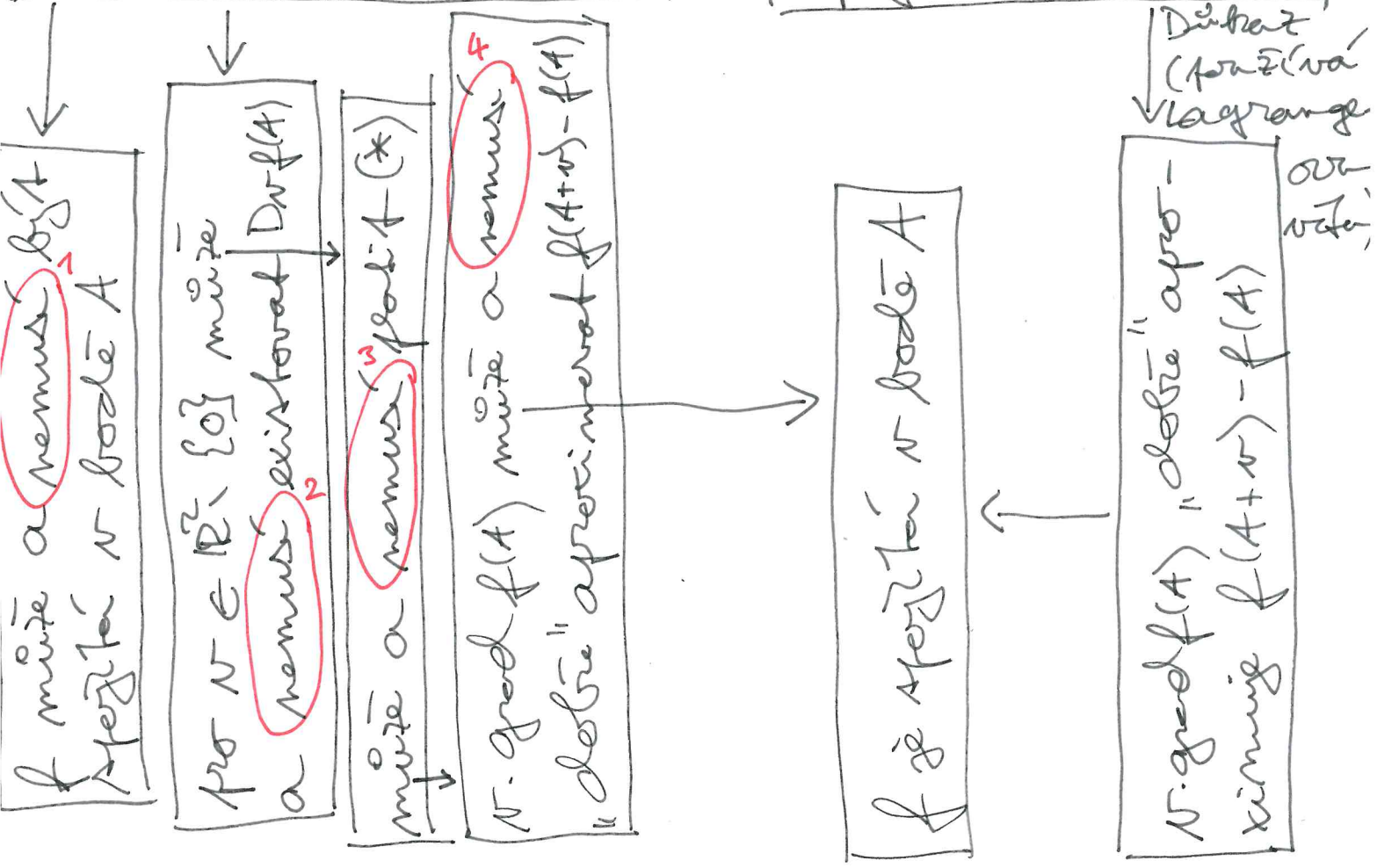
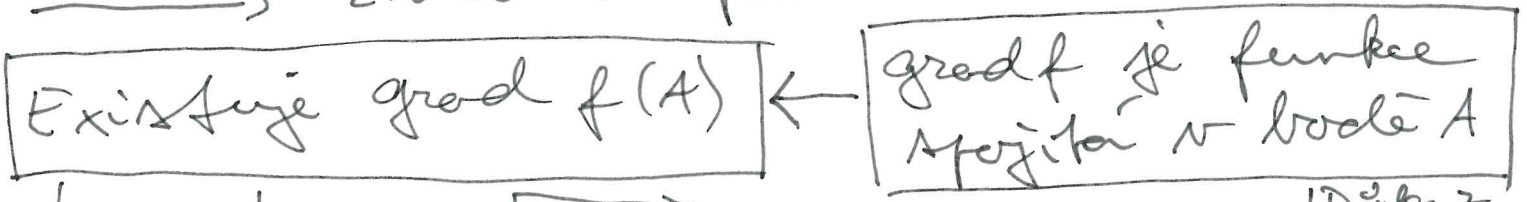
(\*) značí vztah  $D_v f(A) = v \cdot \text{grad } f(A)$

"dobrá" aproximace  $f(A+v) - f(A)$

výrazem  $v \cdot \text{grad } f(A)$  zhrnuje:

$\lim_{v \rightarrow 0} \frac{f(A+v) - f(A) - v \cdot \text{grad } f(A)}{\|v\|} = 0$

→ značí implikaci



Kandidati na funkcije  $\Delta$  vlastitosti

1, 2, 3, 4:

$$\begin{cases} 1 & \text{pro } y = x^2, (x, y) \neq (0, 0) \\ 0 & \text{jinak} \end{cases}$$

$$\begin{cases} 0 & \text{pro } (x, y) = (0, 0) \\ \frac{x^2 y}{x^4 + y^2} & \text{jinak} \end{cases}$$

$$\begin{cases} 0 & \text{pro } (x, y) = (0, 0) \\ \frac{x^4 y^2}{x^8 + y^4} & \text{jinak} \end{cases}$$

~~...~~

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

$$\begin{cases} 0 & (x, y) = (0, 0) \\ \frac{x^2 y}{x^2 + y^2} & \text{jinak} \end{cases}$$

$$\begin{cases} 0 & (x, y) = (0, 0) \\ \frac{xy}{\sqrt{x^2 + y^2}} & \text{jinak} \end{cases}$$