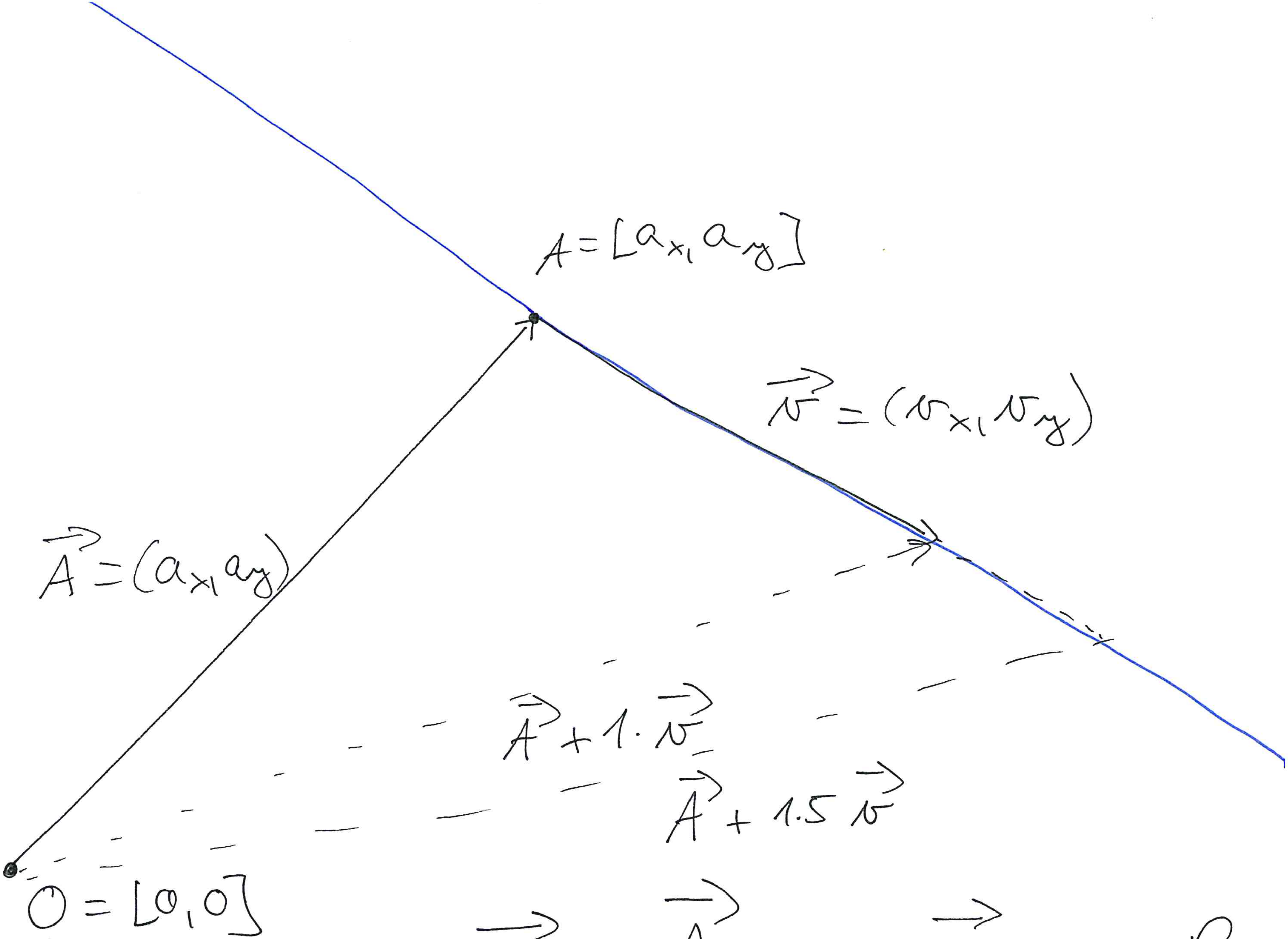
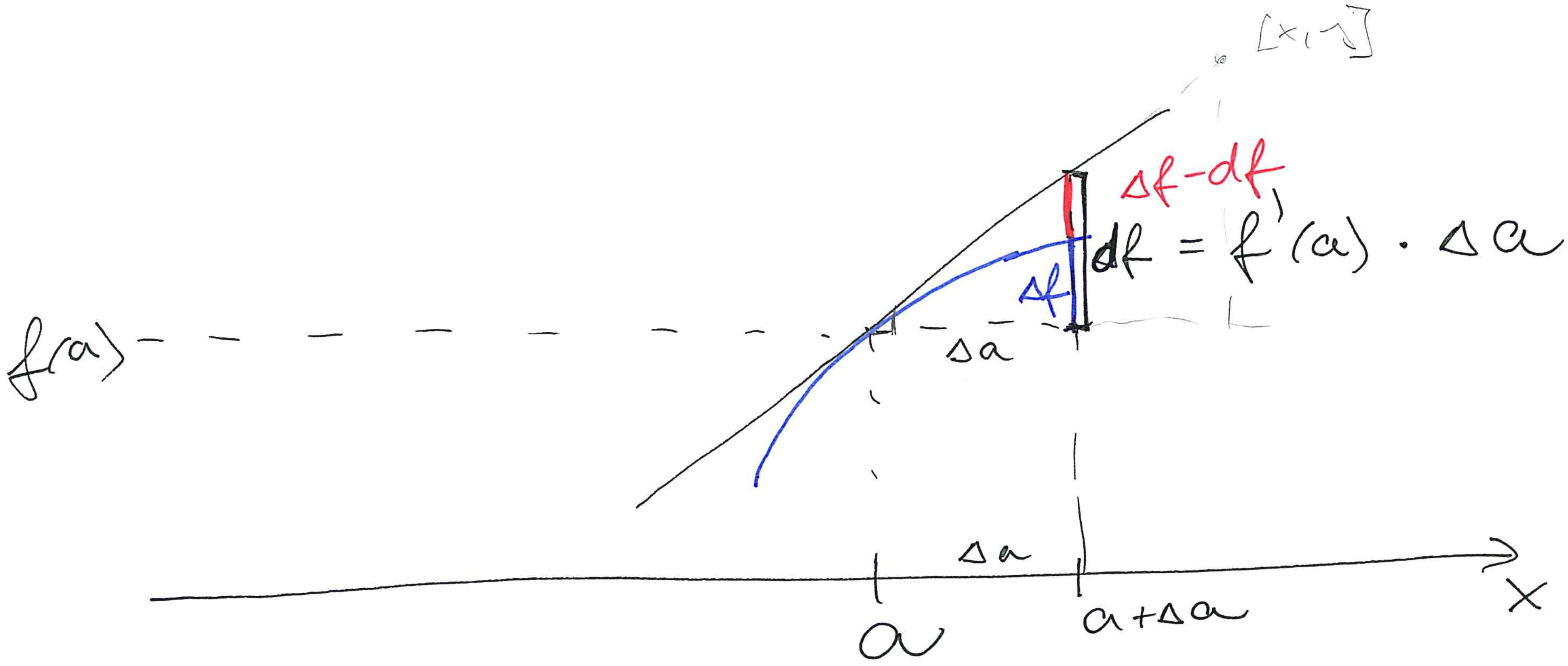


$$\vec{X} = \vec{A} + y\,\vec{v} \qquad y \in \mathbb{R}$$



$$\boxed{\text{Pro } \Delta a = 1 \quad \text{je} \quad df = f'(a)}$$

linearizovaný přírůstek

přírůstek na tečně (ne na grafu funkce)

$$f'(a) = \lim_{\Delta a \to 0} \frac{f(a+\Delta a) - f(a)}{\Delta a} = \frac{df}{\Delta a} = \frac{df}{da}$$

$$0 = \lim_{\Delta a \to 0} \frac{\overbrace{f(a+\Delta a) - f(a)}^{\Delta f} - \underbrace{f'(a) \cdot \Delta a}_{= df}}{\Delta a}$$

$$y = kx + g \qquad k = \frac{df}{\Delta a} = f'(a)$$

$$\frac{y - f(a)}{x - a} = f'(a)$$

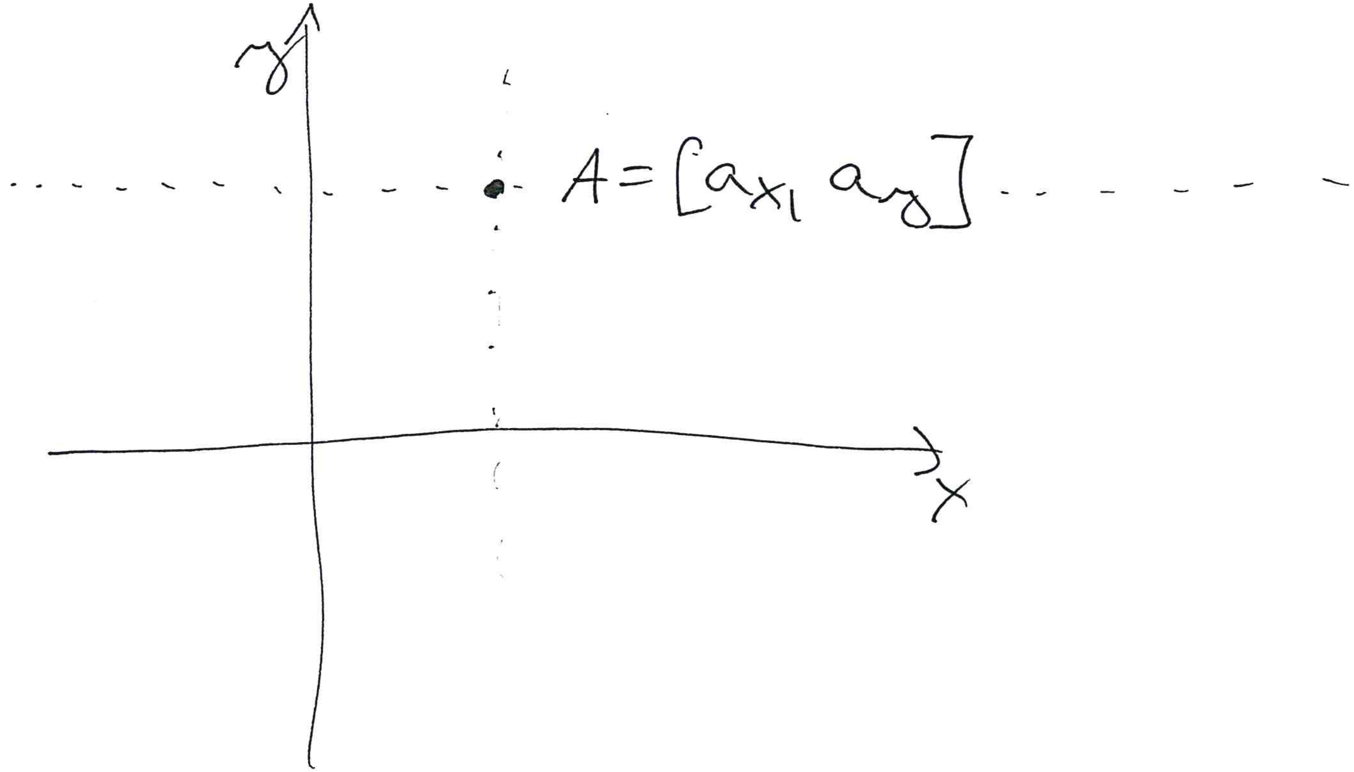
$$\frac{f(a+\Delta a) - y}{\Delta a}$$

$$y = f(a) + f'(a)(x - a)$$

Vztah $\lim_{\Delta a \to 0} \frac{f(a+\Delta a) - \left(f(a) + f'(a) \overbrace{(x-a)}^{\Delta a} \right)}{\Delta a} = 0$

lze číst: rozdíl $f(a+\Delta a)$ − (hodnota na tečně)

je pro malé Δa ještě menší



Definice:

$$\frac{\partial f}{\partial x}(A) = \lim_{\Delta x \to 0} \frac{f(a_x + \Delta x, a_y) - f(a_x, a_y)}{\Delta x}$$

$$\frac{\partial f}{\partial y}(A) = \lim_{\Delta y \to 0} \frac{f(a_x, a_y + \Delta y) - f(a_x, a_y)}{\Delta x}$$

Derivací podle vektoru v funkce f v bodě A rozumíme limitu

$f(a_x, a_y)$

$$D_v f(A) = \lim_{t \to 0} \frac{f(A + t \cdot v) - f(A)}{t}$$