

1. $f(x) = e^{6-3x} - 1$

$$f(x) = 0 \Leftrightarrow e^{6-3x} - 1 = 0$$

$$e^{6-3x} = 1$$

$$6-3x = 0$$

$$x = 2$$

TEČNÝ BOD: $P_x = [2; 0]$

$$f'(x) = (-3) \cdot e^{6-3x}$$

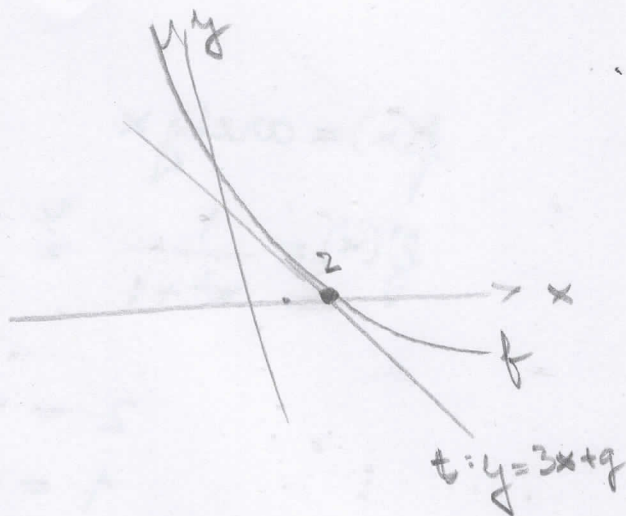
$$k = f'(2) = \underline{\underline{-3}}$$

$$t: y = -3x + q$$

$$[2; 0] \in t: 0 = -6 + q$$

$$\underline{\underline{q = 6}}$$

$$t: y = -3x + 6$$



2. přímka procházející body A a B : $p: y = kx + q$

$$A \in p \Rightarrow 0 = k \cdot (-2) + q \quad \text{2} \oplus$$

$$B \in p \Rightarrow 3 = k \cdot (-1) + q \quad \text{1} \cdot (-1)$$

$$-3 = -k$$

$$k = 3$$

$$q = 6$$

$$p: y = 3x + 6 \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} p \parallel t$$

$$t: y = 3x + c$$

směrnice tečny je $k = 3$

$$f(x) = -x^2 + 5x$$

$$f'(x) = -2x + 5 \stackrel{?}{=} 3$$

$$x_0 = 1$$

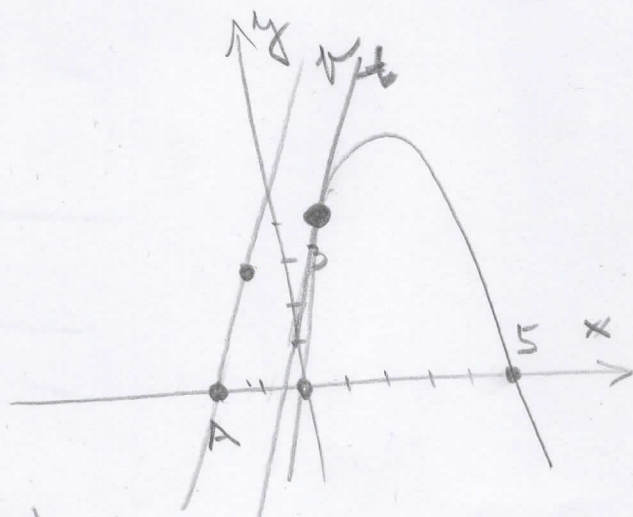
$$f(x_0) = 4$$

tečný bod $[1; 4]$

$$[1; 4] \in t: 4 = 3 \cdot 1 + c$$

$$c = 1$$

$$t: y = 3x + 1$$



3

$$f = 2x + y + 5 = 0$$

$$t = x - 2y + c = 0$$

$$f \neq t$$

$$\text{lečna: } y = \frac{1}{2}x + \frac{1}{2}c$$

$$f(x) = \arcsin x$$

$$f'(x) = \frac{1}{x^2+1} \stackrel{?}{=} \frac{1}{2}$$

$$2 = x^2 + 1$$

$$1 = x^2$$

$$\pm 1 = x$$

$$\text{lečné body: } [1; \frac{\pi}{4}] = T_1$$

$$[-1; -\frac{\pi}{4}] = T_2$$

$$T_1 \in t_1: \frac{\pi}{4} = \frac{1}{2} + c_1 \Rightarrow c_1 = \frac{\pi}{4} - \frac{1}{2}$$

$$T_2 \in t_2: -\frac{\pi}{4} = -\frac{1}{2} + c_2 \Rightarrow c_2 = \frac{1}{2} - \frac{\pi}{4}$$

$$t_1: y = \frac{1}{2}x + \frac{\pi}{4} - \frac{1}{2}$$

$$t_2: y = \frac{1}{2}x - \frac{\pi}{4} + \frac{1}{2}$$

