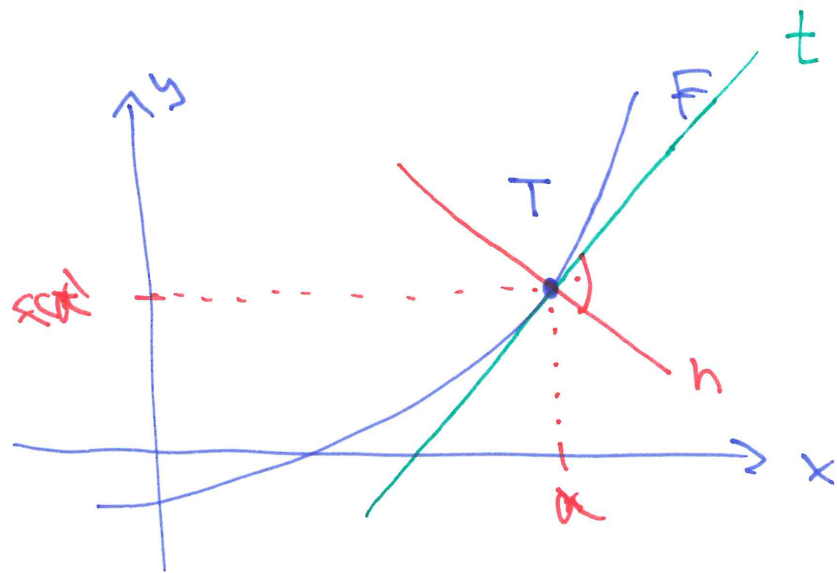


## Těčna a normála



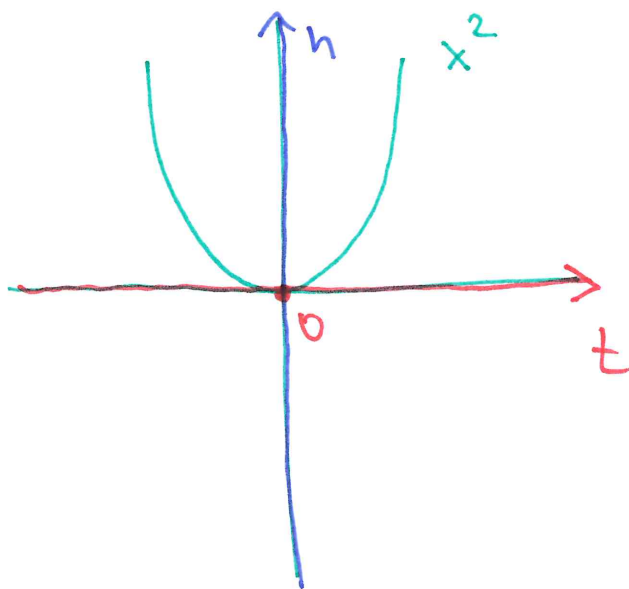
$$t: y - f(a) = f'(a) \cdot (x - a)$$

$$n: y - f(a) = \frac{-1}{f'(a)} (x - a)$$

$k_t$  ... směrnice tečny  
 $k_n$  ... směrnice normály

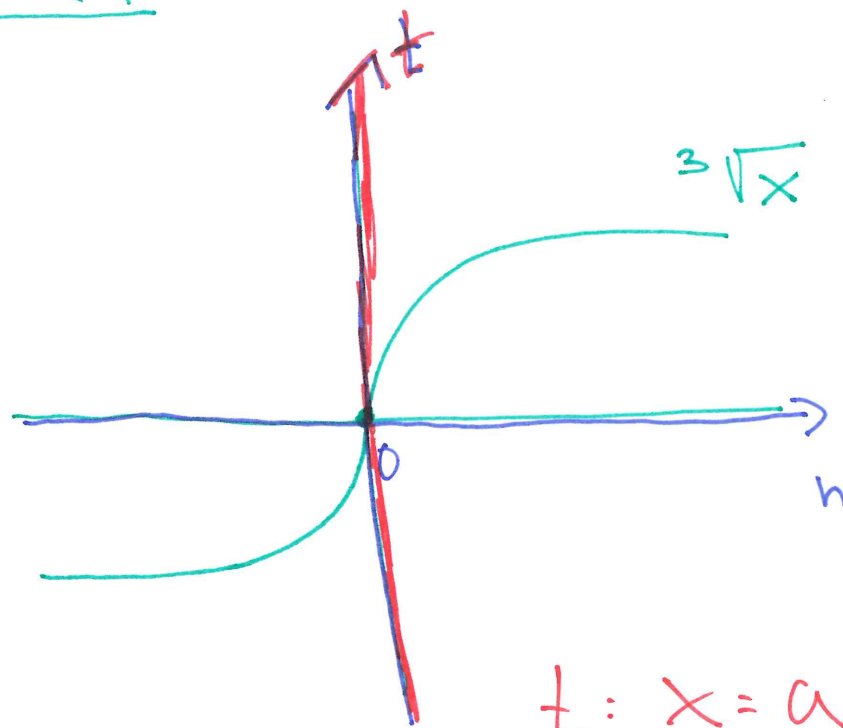
$$k_t \cdot k_n = -1$$

## Speciālni pūpadiņi



$$t: y = f(a)$$

$$h: x = a$$



$$t: x = a$$

$$h: y = f(a)$$

2a)  $f(x) = x \cdot e^x$ ,  $T = [0; ?]$   
CV6-8

①  $f(0) = 0 \cdot e^0 = 0$

②  $f'(x) = (x \cdot e^x)' = e^x + x \cdot e^x$

③  $f'(0) = e^0 + 0 \cdot e^0 = 1$

④  $t: y - f(a) = f'(a) \cdot (x - a)$

$y - 0 = 1 \cdot (x - 0)$

$y = x$

$h: y - f(a) = \frac{1}{f'(a)} (x - a)$

$y - 0 = -1(x - 0)$

$y = -x$

2b

(V6-8)

$$f(x) = \frac{x}{3-x^2}$$

$$T = [2; ?]$$

$$(1) f(2) = \frac{2}{3-2^2} = \frac{2}{-1} = -2$$

$$(2) f'(x) = \left( \frac{x}{3-x^2} \right)' = \frac{1 \cdot (3-x^2) - \cancel{x} \cdot (-2x)}{(3-x^2)^2}$$

$$(3) f'(2) = \frac{1 \cdot (3-4) - 2 \cdot (-4)}{(3-4)^2} = \frac{-1+8}{1} = 7$$

$$(4) \text{L: } y+2 = \boxed{7}(x-2) \quad \text{r: } y+2 = \boxed{-\frac{1}{7}}(x-2)$$

(2F)

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

$$T = [\underline{0}; ?]$$

(1)  $f(0) = \underline{\underline{0}}$

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

(3)  $f'(0) = 0$

~~(4)~~

~~$z: y - \underline{\underline{0}} = \underline{\underline{0}} \cdot (x - \underline{\underline{0}})$~~

~~$y = 0$~~

~~$n: x = a$~~

~~$x = 0$~~

$z: y - 0 = 0 \cdot (x - 0)$   
 $y = 0$

$n: x = 0$