

#### 4. FUNKCE:

definice: Funkce je předpis, který každému  $x \in D$  přiřadí právě 1  $y \in H$ .

$D$ ... definiční obor funkce  
 $H$ ... obor hodnot funkce

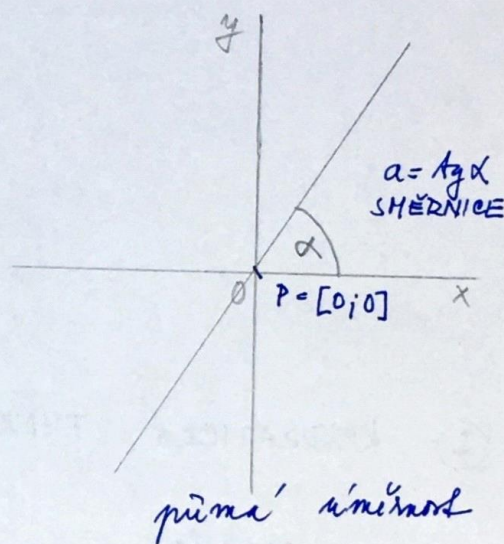
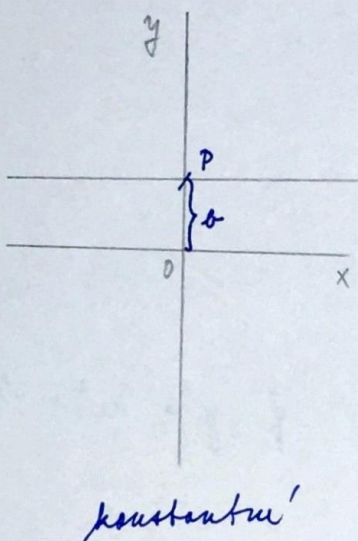
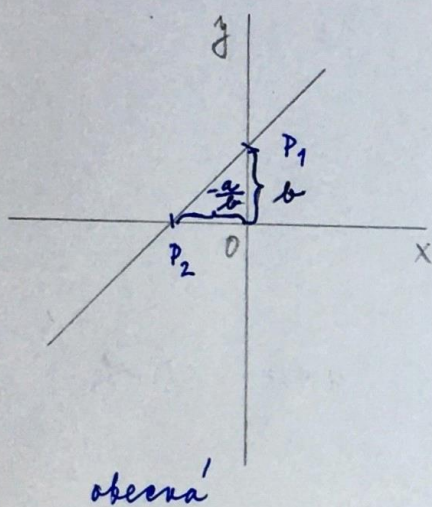
##### ① LINEÁRNÍ FUNKCE

$$D = \mathbb{R}$$

$$f: y = ax + b; a > 0 \text{ rostoucí}; a < 0 \text{ klesající}$$

spec:  $a = 0 \rightarrow y = b$  .. funkce konstantní  
 $b = 0 \rightarrow y = ax$  .. přímá úměrnost

grafy:



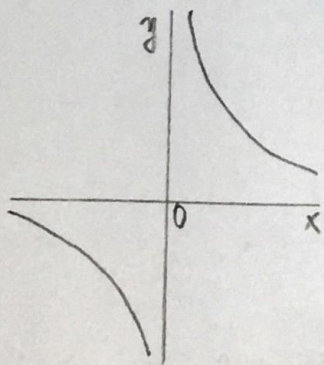
##### ② LINEÁRNÍ LOMENÁ FUNKCE

$$f: y = \frac{ax + b}{cx + d}$$

POZOR  $D: \frac{cx+d \neq 0}{x \neq -\frac{d}{c}}$

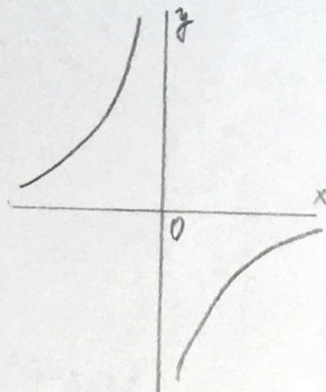
spec:  $y = \frac{k}{x}$  nepřímá úměrnost  $x \neq 0$

grafy: 2 VĚTVĚ HYPERBOLY



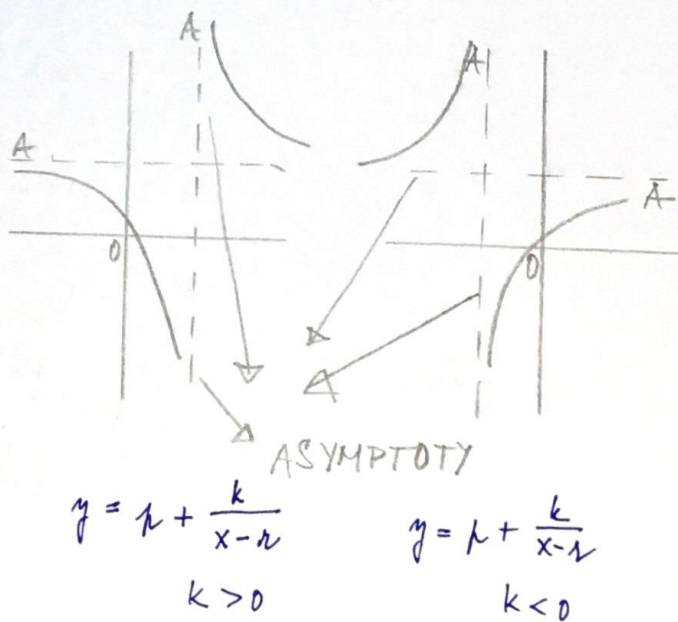
$$y = \frac{k}{x}$$

$$k > 0$$



$$y = \frac{k}{x}$$

$$k < 0$$





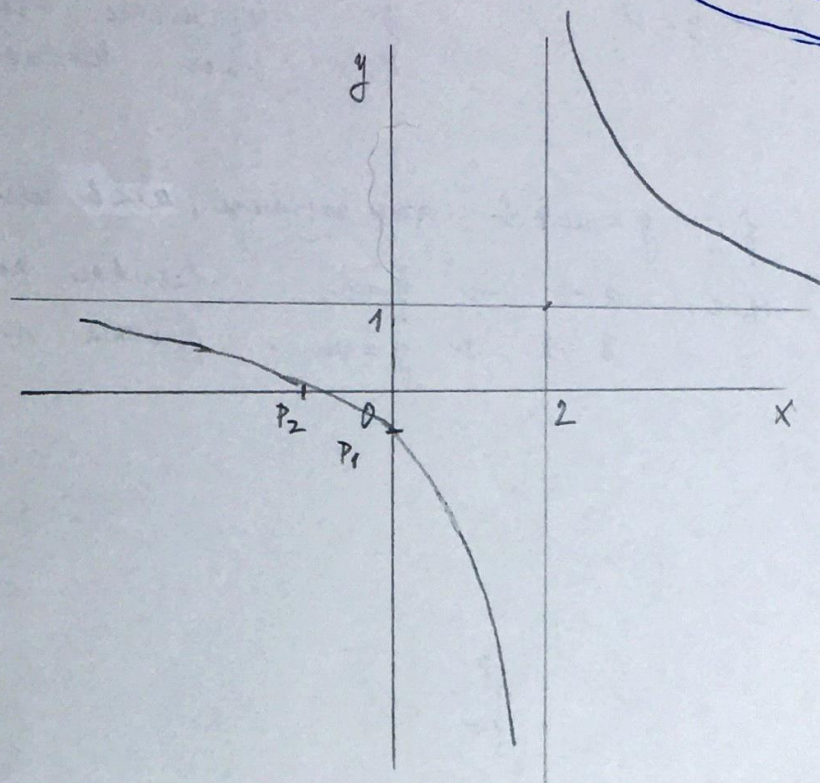
$$\text{př: } f: y = \frac{x+1}{x-2} = \frac{x-2+2+1}{x-2} = \frac{x-2}{x-2} + \frac{3}{x-2} = 1 + \frac{3}{x-2}$$

$$P: x=0 \quad y=-\frac{1}{2}$$

$$y=0 \quad x=-1$$

$$A: x=2$$

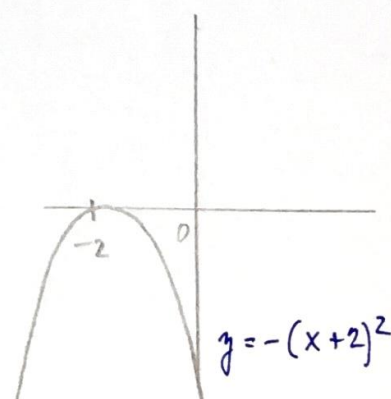
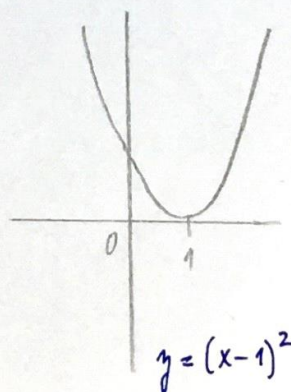
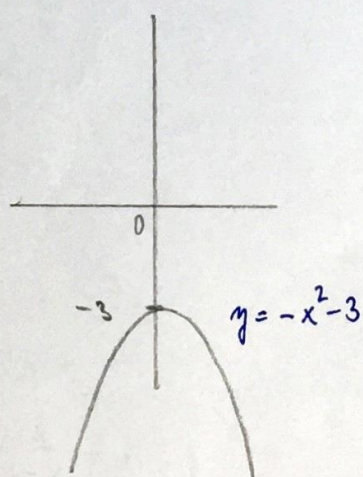
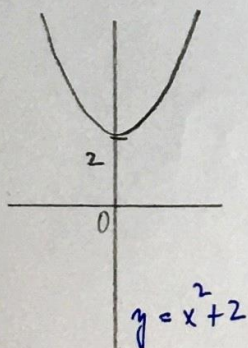
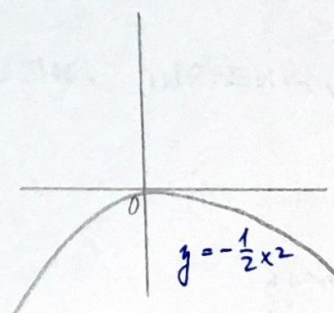
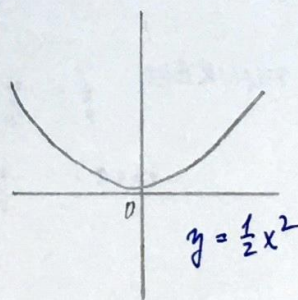
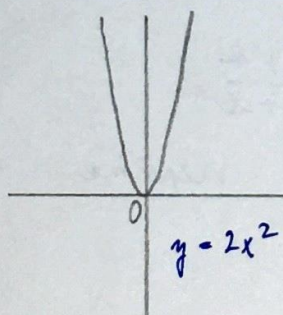
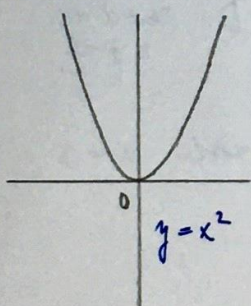
$$y=1$$



### ③ KVADRATICKÁ FUNKCE

$$f: y = ax^2 + bx + c \quad a \neq 0 \quad D = \mathbb{R}$$

graf: parabola



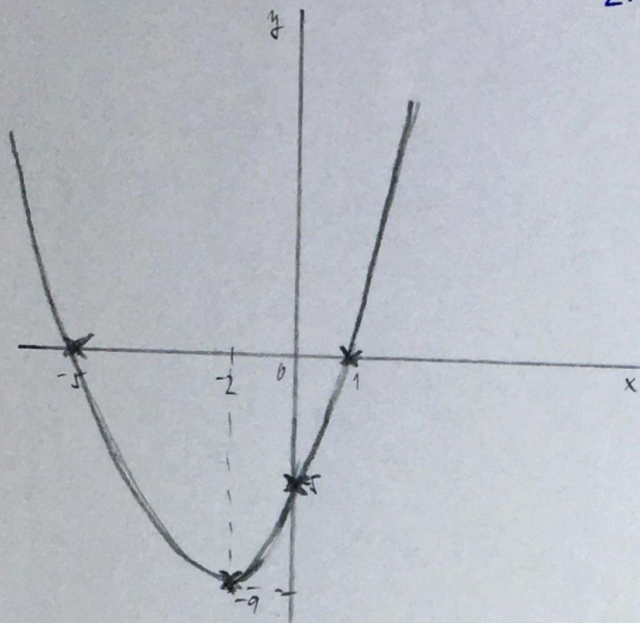


pu:  $y = x^2 + 4x - 5$

dosetím na čísel:  $y = x^2 + 4x + 4 - 4 - 5 = (x+2)^2 - 9$

✓  $4:2=2$   
 $2 \cdot 2=4$

V. - value  
V [-2, -9]



P:  $x=0$   $y=-5$   
 $y=0$   $x^2+4x-5=0$   
 $x_1=1$   $x_2=-5$

pu:  $y = 2x^2 - 6x + 5 = 2(x^2 - 3x + (\frac{3}{2})^2) - (\frac{3}{2})^2 \cdot 2 + 5 = 2 \cdot (x - \frac{3}{2})^2 + \frac{1}{2}$   
 sign  $\vee$   $\vee [\frac{3}{2}; \frac{1}{2}]$

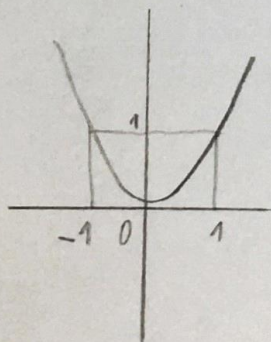
$$y = -3x^2 + 12x + 1 = -3(x^2 - 4x + 4) + 12 + 1 = -3(x-2)^2 + 13$$

Apex  $\cap$   $V[2; 13]$

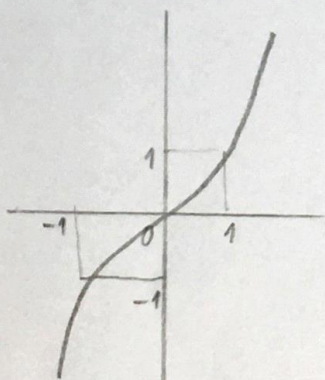
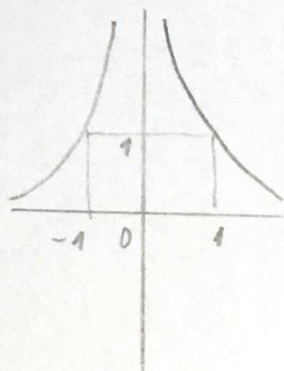
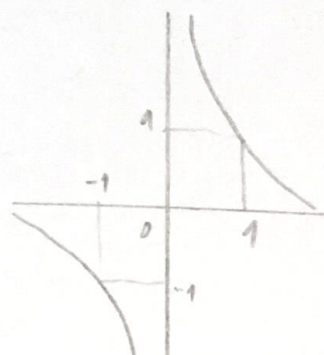
④ MOCNINNE' FUNKOE

$$f: y = x^2$$

jealty:



$m \in N$   
 su de!


$$m \in \mathbb{N}$$

$$m \in \mathbb{Z}^+$$

$$n \in \mathbb{Z}^-$$

liche'