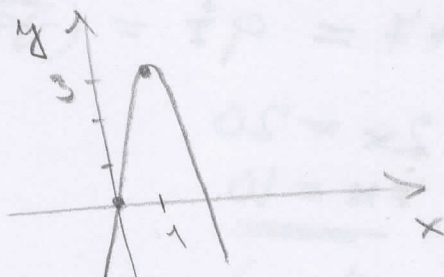


1. kořeny 0,3 :  $x \cdot (x-3) = 0$   
 $x^2 - 3x = 0$

právě jeden reálný kořen, najdi.  $x^2 + 2x + 1 = 0$   
 žádné reálné kořeny, najdi.  $x^2 + 1 = 0$

2.



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

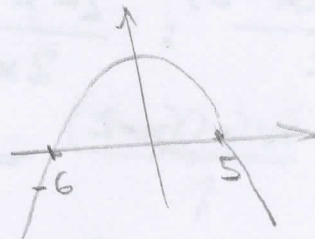
3.

$$g(x) = \sqrt{30-x-x^2}$$

$$30-x-x^2 \geq 0$$

$$(-1)(x^2+x-30) \geq 0$$

$$(-1)(x+6)(x-5) \geq 0$$



$$D_g = \langle -6, 5 \rangle$$

4.

$$2^{x+2} + 2^{x-1} - 2^{x-3} = \frac{35}{64}$$

$$2^x \cdot 2^2 + 2^x \cdot 2^{-1} - 2^x \cdot 2^{-3} = \frac{35}{64}$$

$$2^x \cdot \left(4 + \frac{1}{2} - \frac{1}{8}\right) = \frac{35}{64}$$

$$2^x \cdot \frac{32+4-1}{8} = \frac{35}{64} \quad | \cdot \frac{8}{35}$$

$$2^x = \frac{1}{8}$$

$$2^x = 2^{-3}$$

$$\underline{\underline{x = -3}}$$

5.

$$\log_{\sqrt{8}} \left( \frac{1}{2} + \log_{\sqrt{9}} (2x+7) \right) = \frac{1}{3}$$

$$\frac{1}{2} + \log_{\sqrt{9}} (2x+7) = 8^{\frac{1}{3}} = 2$$

$$\log_{\sqrt{9}} (2x+7) = \frac{3}{2}$$

$$2x+7 = 9^{\frac{3}{2}} = (\sqrt{9})^3 = 27$$

$$2x = 20$$

$$\underline{\underline{x = 10}}$$

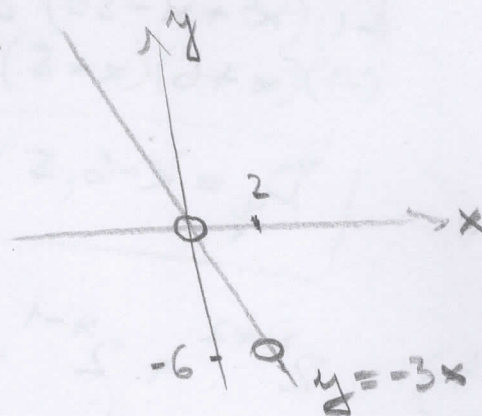
6.  $f(x) = \left( 1 - \frac{x-5}{x-2} \right) : \left( \frac{1}{2x} + \frac{1}{4-2x} \right) =$

$$= \frac{x-2-(x-5)}{x-2} : \frac{2-x+x}{2x(2-x)} = \frac{3}{x-2} : \frac{2}{2x(2-x)} =$$

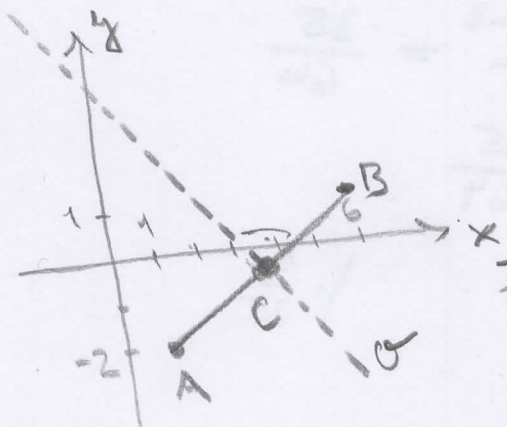
$$= \frac{3}{x-2} \cdot \frac{x \cdot (-1)(x-2)}{1} = -3x$$

$$D_f = \mathbb{R} - \{0; 2\}$$

$$H_f = \mathbb{R} - \{0; -6\}$$



7.



$$C = \frac{A+B}{2} = \left[ \frac{7}{2}; -\frac{1}{2} \right]$$

$$g: ax + by + c = 0$$

$$\vec{n}_0 = \vec{AB} = B - A = (5, 3)$$

normální vektor přímky  $g$

$$g: 5x + 3y + c = 0$$

$$C \in g: 5 \cdot \frac{7}{2} + 3 \cdot \left(-\frac{1}{2}\right) + c = 0$$

$$\Rightarrow c = -16$$

$$\boxed{g: 5x + 3y - 16 = 0}$$

8.

$$k: (x-4)^2 + y^2 = 4$$

$$g: y = (x+2)^2$$

$$f: y = 2x + 1$$