

Nepřímá úměrnost, lineární lomená funkce

1) Nakreslete grafy funkcí, určete jejich vlastnosti, najděte souřadnice středu hyperboly

$$f_1 = \frac{1}{x}$$

$$f_2 = \frac{1}{x} + 1$$

$$f_3 = \frac{1}{x} - 1$$

$$f_4 = \frac{1}{x+1}$$

$$f_5 = \frac{1}{x-1}$$

$$f_6 = \frac{1}{x-1} + 1$$

$$f_7 = -\frac{1}{x}$$

$$f_8 = -\frac{1}{x} + 1$$

$$f_9 = -\frac{1}{x} - 1$$

$$f_{10} = -\frac{1}{x+1}$$

$$f_{11} = -\frac{1}{x-1}$$

$$f_{12} = -\frac{1}{x-1} + 1$$

2) Je dána funkce g

$$g: y = \frac{2}{x+1}$$

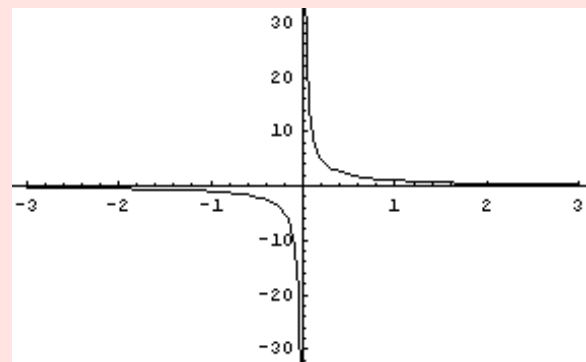
$$D(g) = (-1, 4)$$

- a) načrtněte graf funkce v zadaném oboru
- b) určete: $g(4)$, $g(0)$, $g(2)$, $g(3)$
- c) určete, pro které x je $g(x)=1$
- d) určete $H(g)$
- e) určete ostatní vlastnosti funkce

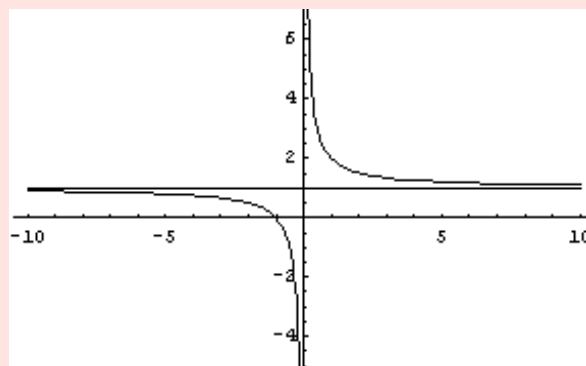
- a) U všech funkcí určete $D(h)$, $H(h)$
- b) Vyznačte asymptoty, určete střed hyperboly

Výsledky

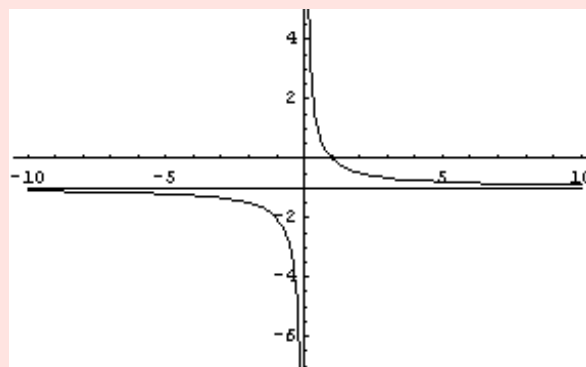
$$f_1 = \frac{1}{x}$$



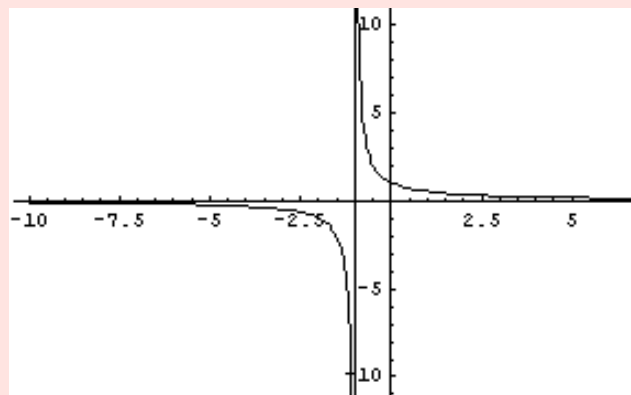
$$f_2 = \frac{1}{x} + 1$$



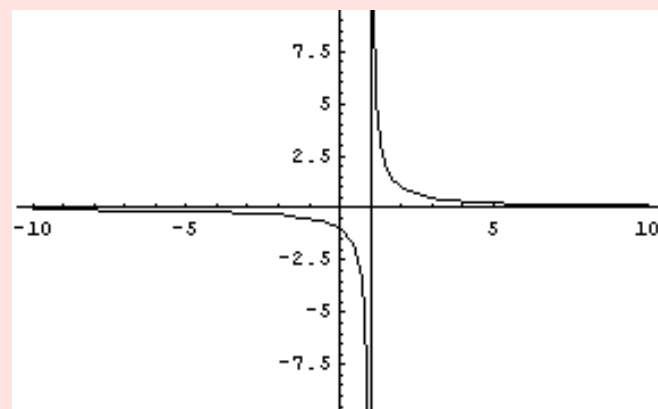
$$f_3 = \frac{1}{x} - 1$$



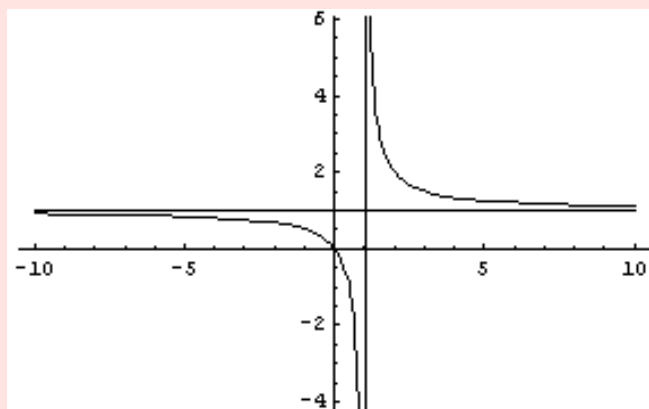
$$f_4 = \frac{1}{x+1}$$



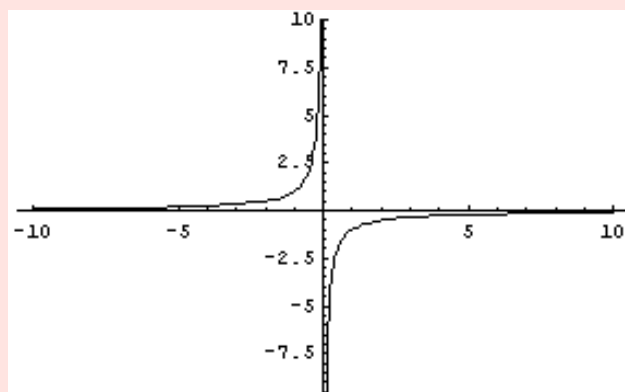
$$f_5 = \frac{1}{x-1}$$



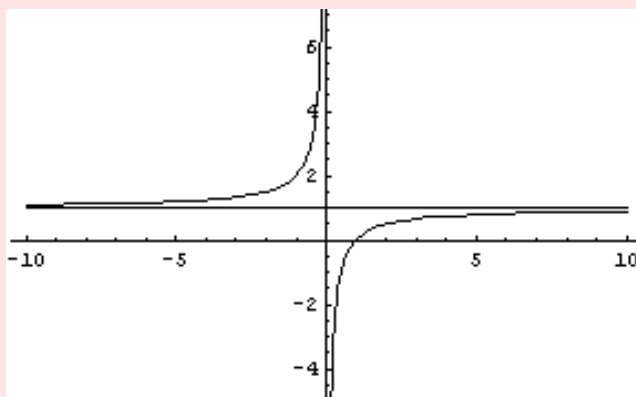
$$f_6 = \frac{1}{x-1} + 1$$



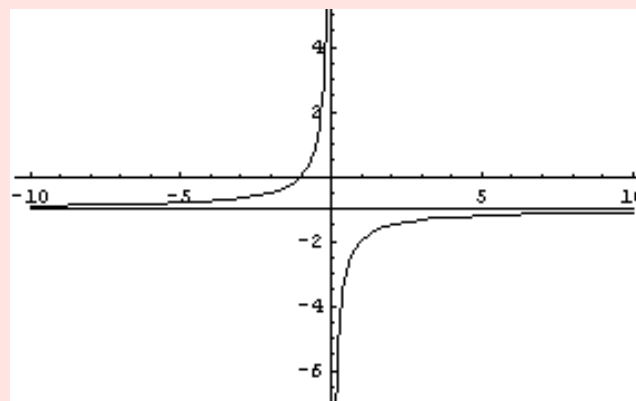
$$f_7 = -\frac{1}{x}$$



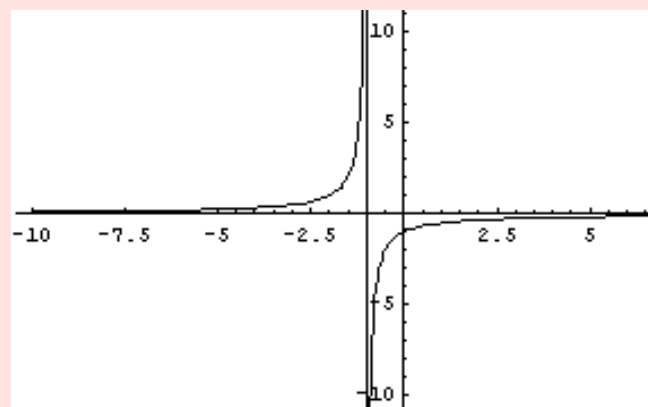
$$f_8 = -\frac{1}{x} + 1$$



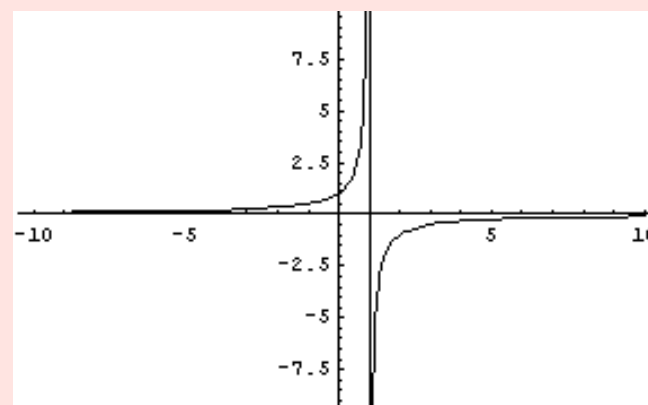
$$f_9 = -\frac{1}{x} - 1$$



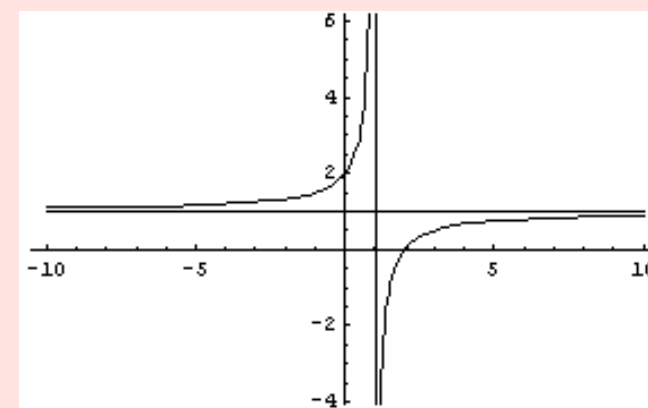
$$f_{10} = -\frac{1}{x+1}$$



$$f_{11} = -\frac{1}{x-1}$$



$$f_{12} = -\frac{1}{x-1} + 1$$



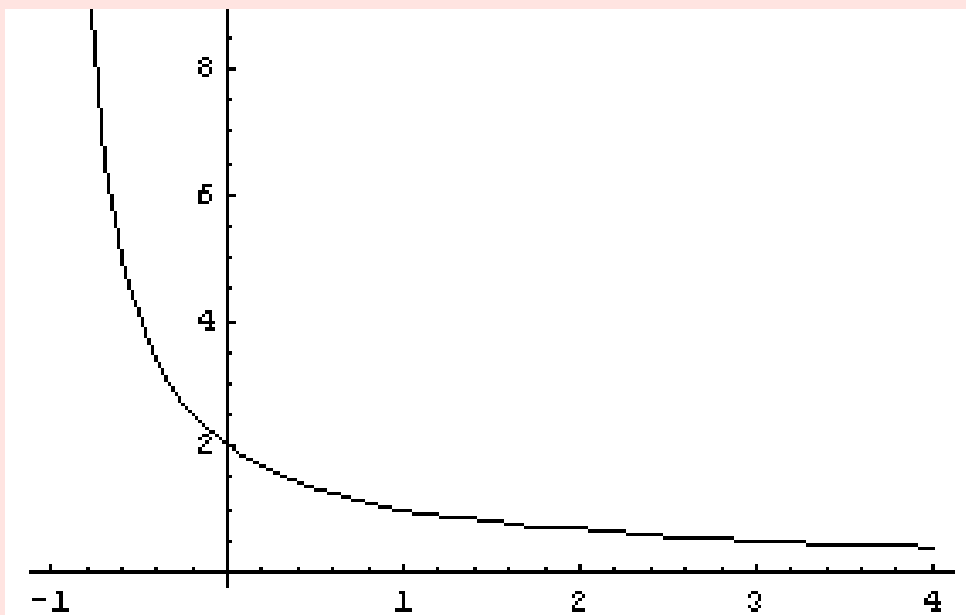
2)

$$g: y = \frac{2}{x+1}$$

$$D(g) = (-1, 4)$$

$$H(g) = \left(\frac{2}{5}, \infty\right)$$

$$g(4) = 0,4 \quad g(0) = 2 \quad g(2) = 2/3 \quad g(3) = 0,5$$



Zakreslete graf fce:

$$y = \frac{x+1}{x+2}$$

Fční předpis převedeme na tvar:

$$Y = \frac{k}{x+m} + n$$

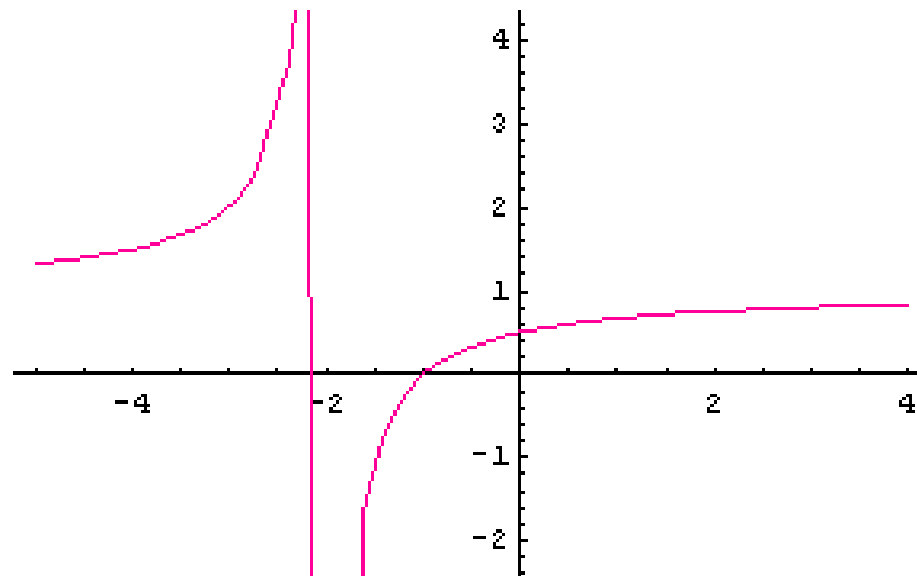
$$\begin{aligned} (x+1) : (x+2) &= 1 \\ -(x+2) & \\ -1 & \end{aligned}$$

Upravený fční předpis:

$$y = \frac{-1}{x+2} + 1$$

$$S = [-2; 1]$$

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In[55]:= Plot[y, {x, -5, 4}, PlotStyle -> {Hue[0.9]}, PlotDivision -> 1]
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Určete všechny vlastnosti fce:

Zakreslete graf fce:

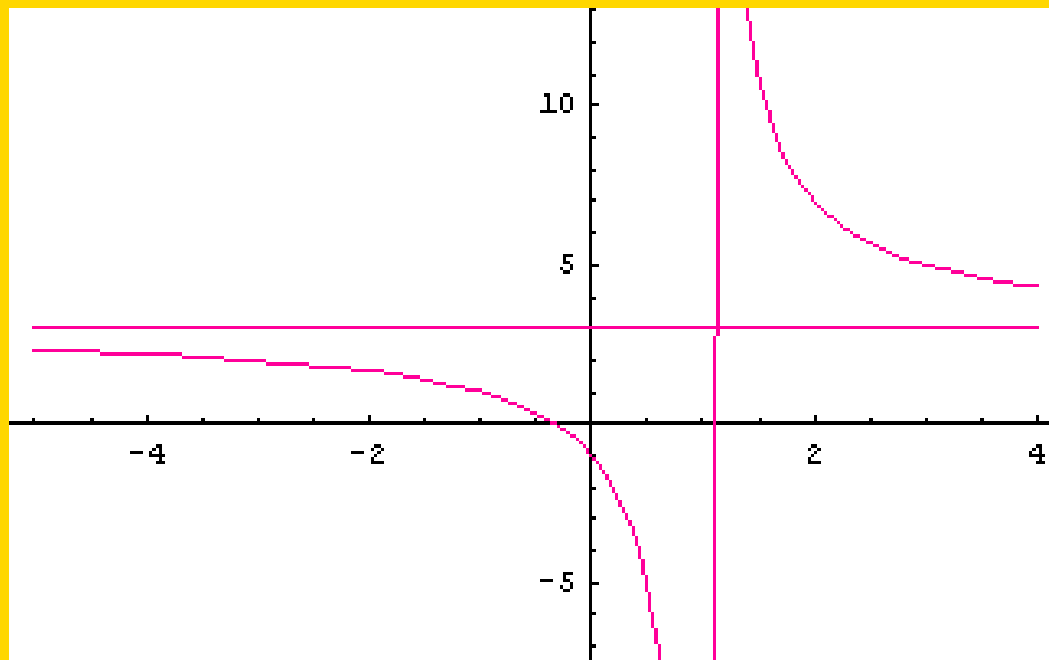
$$Y = \frac{1 + 3x}{-1 + x}$$

Úprava fčního předpisu:

$$\begin{aligned} (3x + 1) : (x - 1) &= 3 \\ -(3x - 3) & \\ 4 & \end{aligned}$$

$$y = \frac{4}{x - 1} + 3$$

$$S = [1; 3]$$



Úlohy k procvičení:

a)
$$Y = \frac{-1 - 3x}{1 + x}$$

b)
$$Y = \frac{3 - x}{1 + 2x}$$

c)
$$Y = \frac{1 - x}{-2 + x}$$

d)
$$Y = \frac{1 - 2x}{1 - x}$$

