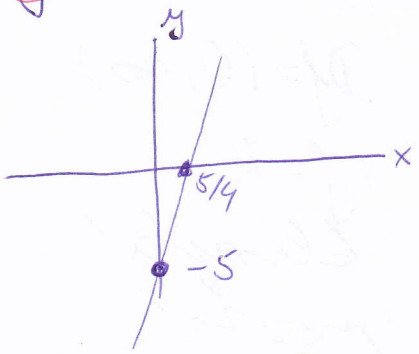
$y = 4x - 5$



$Df = R$ $Hf = R$

rostoucí

prostá

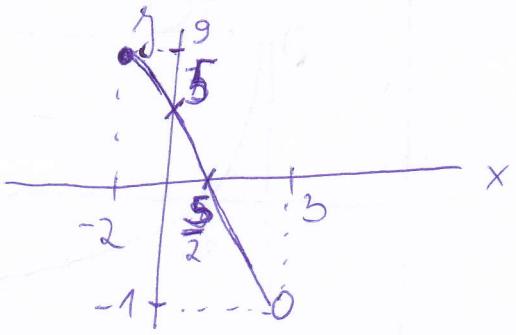
není omez.

ani S ani L

$\lim_{x \to +\infty} f(x) = +\infty$

$\lim_{x \to -\infty} f(x) = -\infty$

$y = -2x + 5 \quad x \in \langle -2; 3)$



$Df = \langle -2; 3)$ $Hf = (-1; 9\rangle$

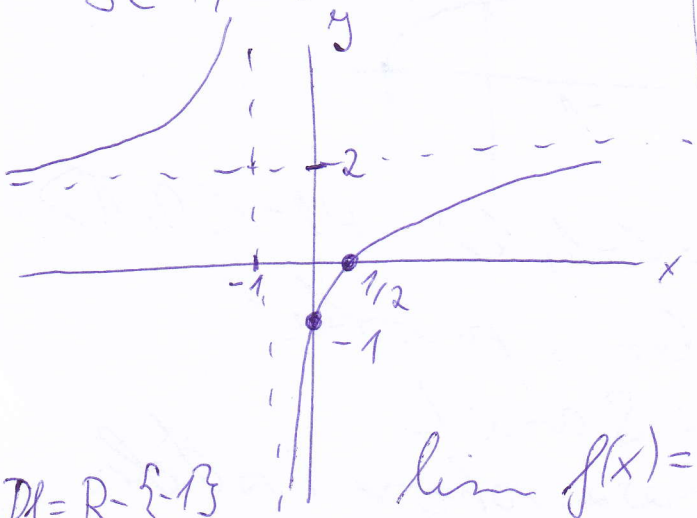
klesající, prostá

omezená shora i zdola

ani S ani L

$y = 2 - \frac{3}{x+1}$

$S[-1; 2]$



$Df = R - \{-1\}$

$Hf = R - \{2\}$

rost. $(-\infty; -1)$

rost. $(-1; +\infty)$

prostá

ani S ani L

není omez.

$\lim_{x \to +\infty} f(x) = 2$

$\lim_{x \to -\infty} f(x) = 2$

$\lim_{x \to -1^+} f(x) = -\infty$

$\lim_{x \to -1^-} f(x) = +\infty$

$y = x^2 - 7x + 10$

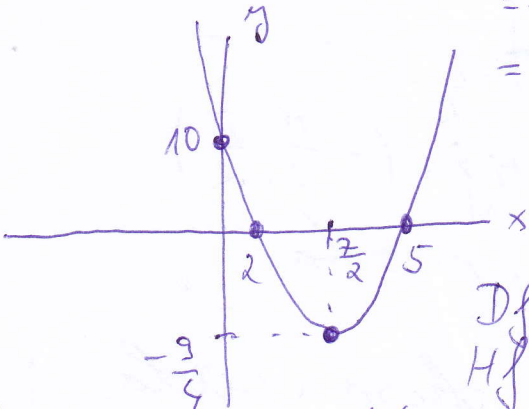
$V[\frac{7}{2}; -\frac{9}{4}]$

$-\frac{b}{2a} = -\frac{7}{2} = \frac{7}{2}$

$y = (\frac{7}{2})^2 - 7 \cdot \frac{7}{2} + 10 = \frac{49}{4} - \frac{49}{2} + 10$

$= \frac{49 - 98 + 40}{4} =$

$= -\frac{9}{4}$



$Df = R$

$Hf = \langle -\frac{9}{4}; \infty)$

není prostá, omez. zdola

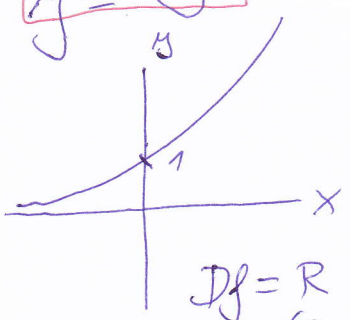
kles. $(-\infty; \frac{7}{2}\rangle$, rost. $\langle \frac{7}{2}; \infty)$

ani S ani L

$\lim_{x \to +\infty} f(x) = +\infty$

$\lim_{x \to -\infty} f(x) = +\infty$

$y = 3^x$



$Df = R$

$Hf = (0; \infty)$

rostoucí

prostá

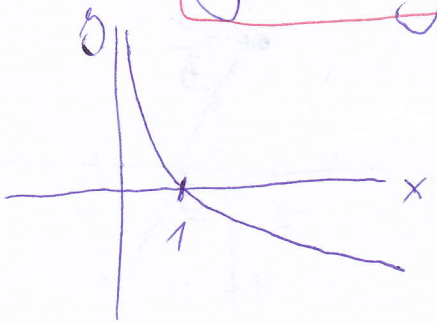
ani S ani L

omez. zdola

$\lim_{x \to +\infty} f(x) = +\infty$

$\lim_{x \to -\infty} f(x) = 0$

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



$Df = (0; \infty)$

$Hf = R$

klesající

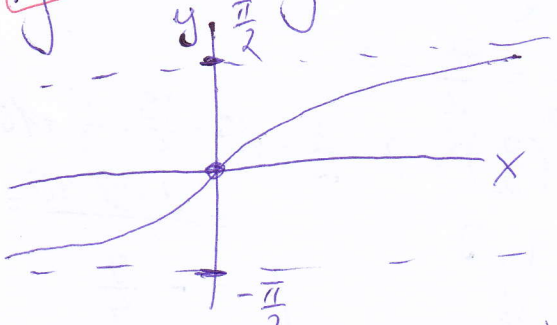
prostá

ani S ani L, není omez.

$\lim_{x \to +\infty} f(x) = -\infty$

$\lim_{x \to 0^+} f(x) = +\infty$

$y = \operatorname{arctg} x$



$Df = R$ $Hf = (-\frac{\pi}{2}, \frac{\pi}{2})$

rost. i prostá

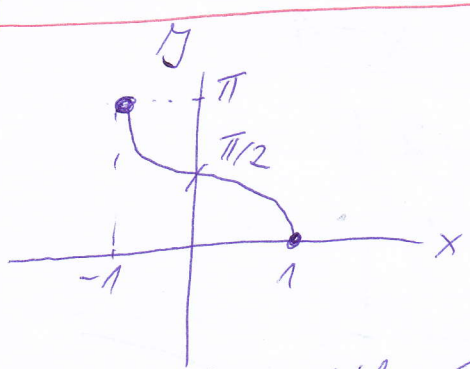
lichá

omez. shora i zdola

$\lim_{x \to +\infty} f(x) = \frac{\pi}{2}$

$\lim_{x \to -\infty} f(x) = -\frac{\pi}{2}$

$y = \arccos x$



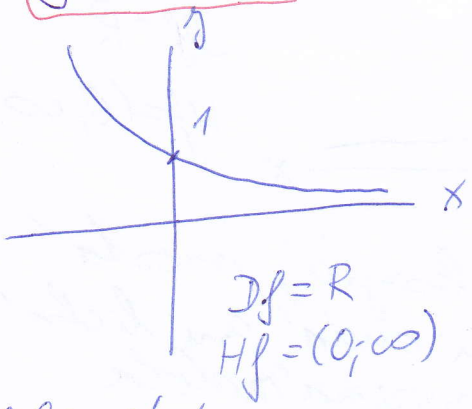
$Df = \langle -1; 1 \rangle$ $Hf = \langle 0; \pi \rangle$

klesající, prostá

ani S ani L

omez. shora i zdola

$y = \left(\frac{1}{2}\right)^x$



$D_f = R$

$H_f = (0; \infty)$

klesající

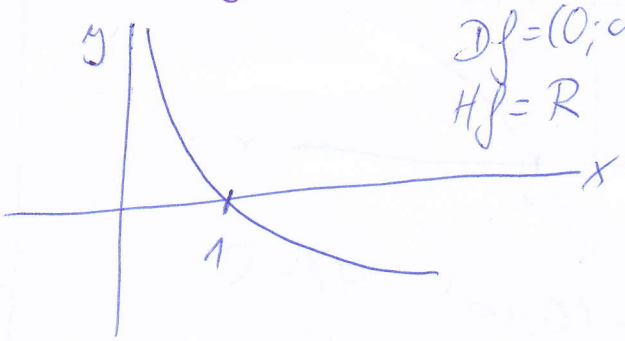
omezená zdola

prostá, ani sudá ani lichá

$\lim_{x \to +\infty} \left(\frac{1}{2}\right)^x = 0$

$\lim_{x \to -\infty} \left(\frac{1}{2}\right)^x = +\infty$

$y = \log_{0,4} x$



$D_f = (0; \infty)$

$H_f = R$

klesající

prostá

ani sudá ani lichá

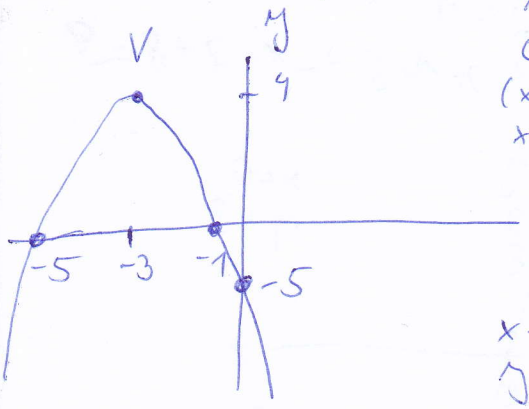
není omezená

$\lim_{x \to +\infty} \log_{0,4} x = -\infty$

$\lim_{x \to 0^+} \log_{0,4} x = +\infty$

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

$V[-3; 4]$



$y = 0$

$0 = -(x+3)^2 + 4$

$(x+3)^2 = 4$

$x + 3 = \pm 2$

$x = -3 \pm 2$

$x = \nearrow -1$

$\searrow -5$

$x = 0$

$y = -3^2 + 4 = -5$

$D_f = R \quad H_f = (-\infty; 4\rangle$

ani sudá ani lichá

omezená shora

není prostá

rostoucí $(-\infty; -3)$

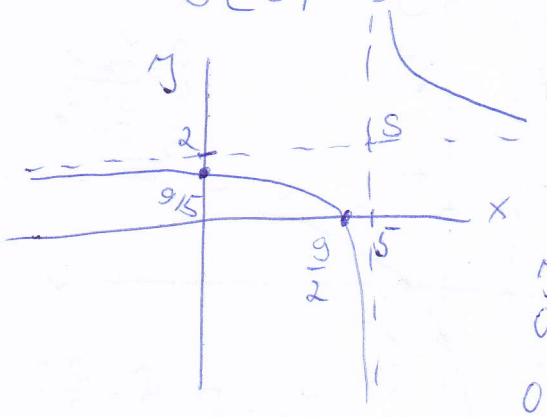
klesající $\langle -3; +\infty)$

$\lim_{x \to +\infty} (-(x+3)^2 + 4) = -\infty$

$\lim_{x \to -\infty} (-(x+3)^2 + 4) = -\infty$

$y = \frac{1}{x-5} + 2$

$S[5; 2]$



$x = 0$

$y = -\frac{1}{5} + 2$

$y = \frac{9}{5}$

$y = 0$

$0 = \frac{1}{x-5} + 2$

$0 = 1 + 2x - 10$

$\frac{9}{2} = x$

$D_f = R - \{5\} \quad H_f = R - \{2\}$

prostá, není omezená

ani sudá ani lichá

klesající $(-\infty; 5)$

klesající $(5; \infty)$

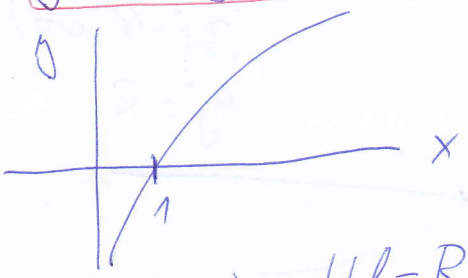
$\lim_{x \to -\infty} \left(\frac{1}{x-5} + 2\right) = 2$

$\lim_{x \to +\infty} \left(\frac{1}{x-5} + 2\right) = 2$

$\lim_{x \to 5^+} \left(\frac{1}{x-5} + 2\right) = +\infty$

$\lim_{x \to 5^-} \left(\frac{1}{x-5} + 2\right) = -\infty$

$y = \log_{\frac{4}{3}} x$



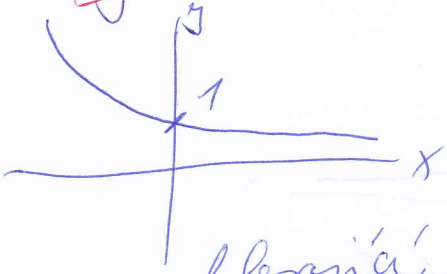
$Df = (0; \infty)$ $Hf = R$

rostoucí, prostá, ani sudá ani lichá, není omezená

$\lim_{x \to +\infty} \log_{\frac{4}{3}} x = +\infty$

$\lim_{x \to 0^+} \log_{\frac{4}{3}} x = -\infty$

$y = 0{,}1^x$



$Df = R$

$Hf = (0; \infty)$

klesající, prostá, ani sudá, ani lichá, omezená zdola

$\lim_{x \to +\infty} 0{,}1^x = 0$

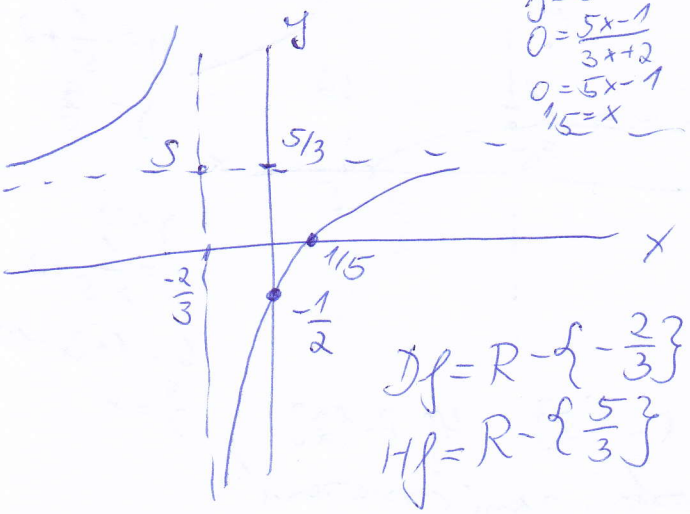
$\lim_{x \to -\infty} 0{,}1^x = +\infty$

$y = \frac{5x-1}{3x+2}$

$S\left[-\frac{2}{3}; \frac{5}{3}\right]$

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

$y = 0$
$0 = \frac{5x-1}{3x+2}$
$0 = 5x - 1$
$1/5 = x$



$Df = R - \{-\frac{2}{3}\}$

$Hf = R - \{\frac{5}{3}\}$

prostá

není omezená

ani sudá ani lichá

rostoucí $(-\infty; -\frac{2}{3})$

rostoucí $(-\frac{2}{3}; \infty)$

$\lim_{x \to +\infty} \left(\frac{5x-1}{3x+2}\right) = \frac{5}{3}$

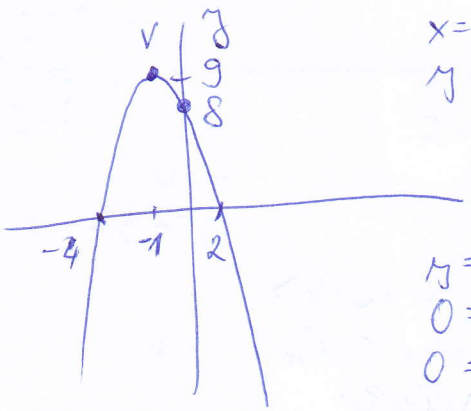
$\lim_{x \to -\infty} \left(\frac{5x-1}{3x+2}\right) = \frac{5}{3}$

$y = -x^2 - 2x + 8$

$V[-1; 9]$

$-\frac{b}{2a} = -\frac{(-2)}{2 \cdot (-1)} = -1$

$y_0 = -(-1)^2 - 2(-1) + 8 = -1 + 2 + 8 = 9$



$x = 0$
$y = 8$

$y = 0$
$0 = -x^2 - 2x + 8$
$0 = x^2 + 2x - 8$
$(x+4)(x-2)$
$x = -4 \quad x = 2$

$Df = R$

$Hf = (-\infty; 9>$

není sudá ani lichá, není prostá

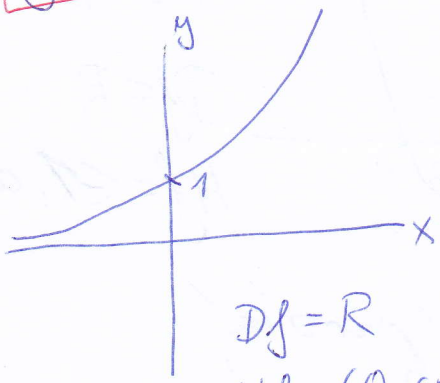
omezená shora

rostoucí $(-\infty; -1>$, klesající $<-1; +\infty)$

$\lim_{x \to +\infty} (-x^2 - 2x + 8) = -\infty$

$\lim_{x \to -\infty} (-x^2 - 2x + 8) = -\infty$

$y = e^x$



$Df = R$

$Hf = (0; \infty)$

rostoucí
ani sudá ani lichá
prostá
omezená zdola

$\lim\limits_{x \to +\infty} e^x = +\infty$

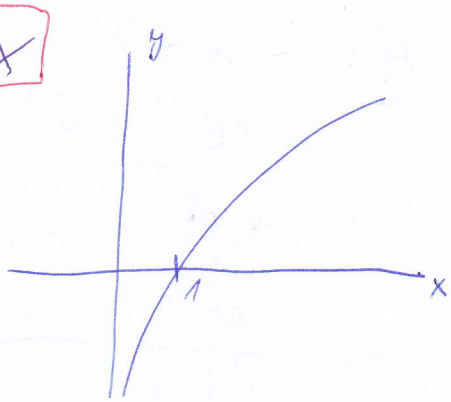
$\lim\limits_{x \to -\infty} e^x = 0$

$y = \ln x$

$Df = (0; \infty)$

$Hf = R$

rostoucí
prostá
ani sudá
ani lichá
není omezená

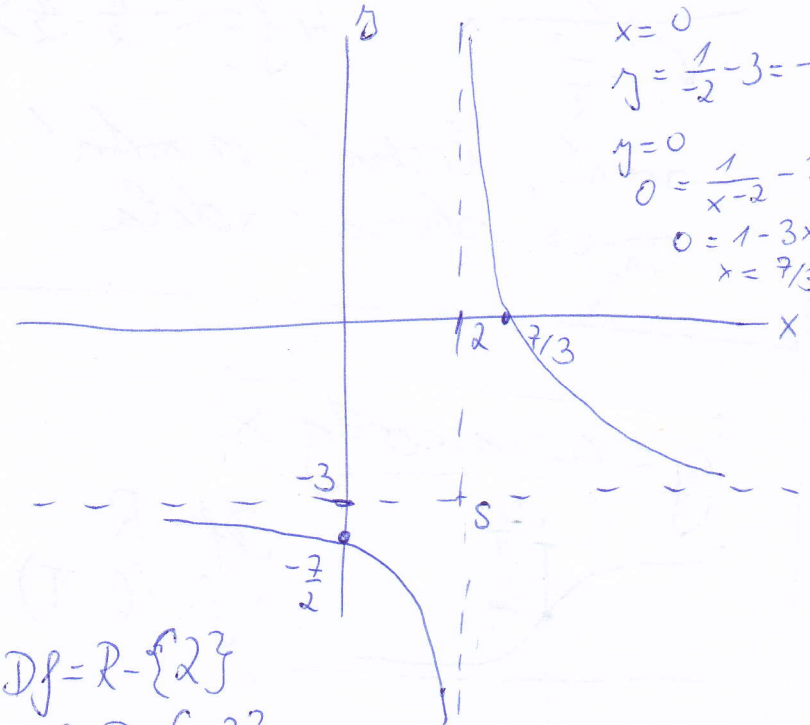


$\lim\limits_{x \to +\infty} \ln x = +\infty$

$\lim\limits_{x \to 0^+} \ln x = -\infty$

$y = \frac{1}{x-2} - 3$

$S[2; -3]$



$x = 0$

$y = \frac{1}{-2} - 3 = -\frac{7}{2}$

$y = 0$

$0 = \frac{1}{x-2} - 3$

$0 = 1 - 3x + 6$

$x = 7/3$

$Df = R - \{2\}$

$Hf = R - \{-3\}$

prostá
klesající $(-\infty; 2)$
klesající $(2; \infty)$
ani sudá,
ani lichá
není omezená

$\lim\limits_{x \to +\infty} \left(\frac{1}{x-2} - 3\right) = -3$

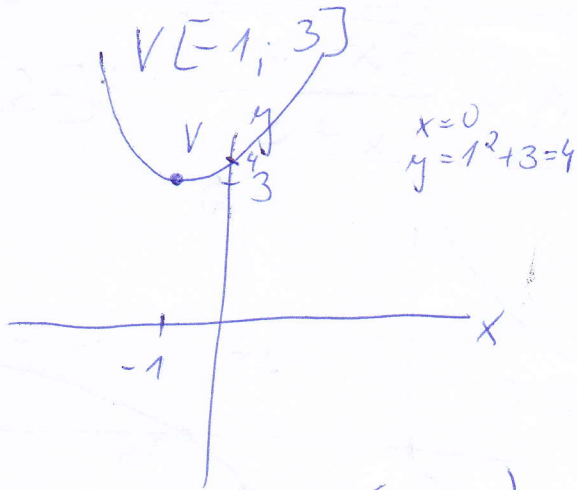
$\lim\limits_{x \to -\infty} \left(\frac{1}{x-2} - 3\right) = -3$

$\lim\limits_{x \to 2^+} \left(\frac{1}{x-2} - 3\right) = +\infty$

$\lim\limits_{x \to 2^-} \left(\frac{1}{x-2} - 3\right) = -\infty$

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

$V[-1; 3]$



$x = 0$

$y = 1^2 + 3 = 4$

$Df = R$ $Hf = \langle 3; \infty)$

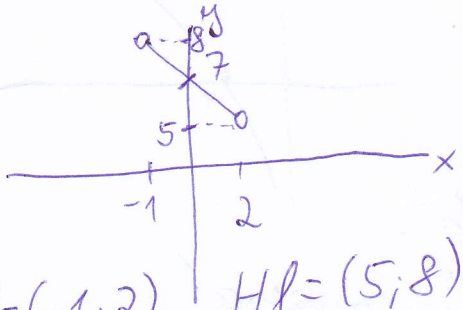
není prostá
ani sudá ani lichá
omezená zdola
klesající $(-\infty; -1\rangle$
rostoucí $\langle -1; +\infty)$

$\lim\limits_{x \to +\infty} ((x+1)^2 + 3) = +\infty$

$\lim\limits_{x \to -\infty} ((x+1)^2 + 3) = +\infty$

$y = -x + 7$

$x \in (-1; 2)$



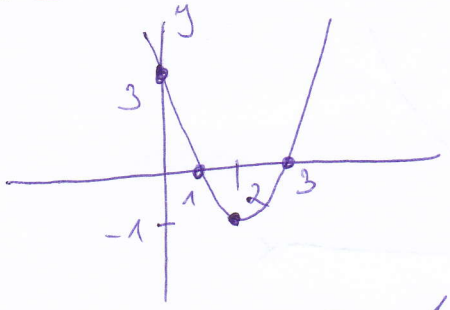
$Df = (-1; 2)$ $Hf = (5; 8)$

kles., omez. shora i zdola

prosta

ani S ani L

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



$V[2; -1]$

$Df = R$

$Hf = \langle -1; \infty)$

není prostá

ani S ani L

omez. zdola

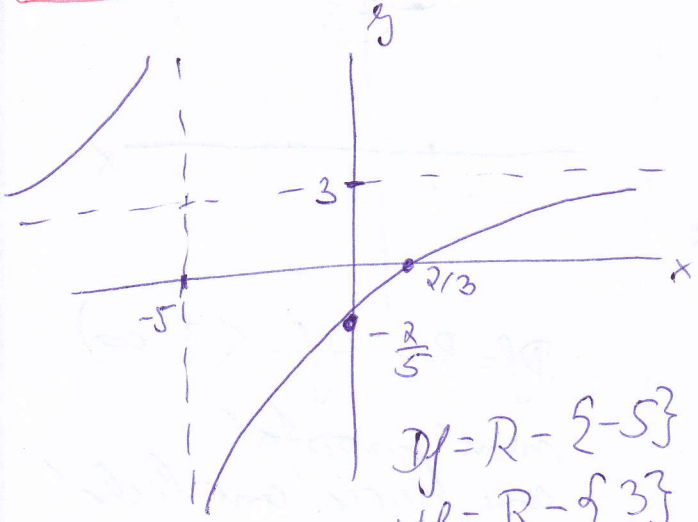
kles. $(-\infty; 2\rangle$

rost $\langle 2; \infty)$

$\lim_{x \to +\infty} f(x) = +\infty$

$\lim_{x \to -\infty} f(x) = +\infty$

$y = \frac{3x-2}{x+5}$ $S[-5; 3]$



$Df = R - \{-5\}$

$Hf = R - \{3\}$

prostá, není omez.

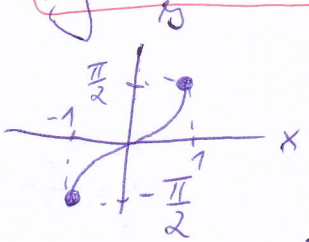
ani S ani L

rost. $(-\infty; -5)$, rost. $(-5; \infty)$

$\lim_{x \to +\infty} f(x) = 3$ $\lim_{x \to -5^+} f(x) = -\infty$

$\lim_{x \to -\infty} f(x) = 3$ $\lim_{x \to -5^-} f(x) = +\infty$

$y = \arcsin x$



$Df = \langle -1; 1\rangle$

$Hf = \langle -\frac{\pi}{2}; \frac{\pi}{2}\rangle$

rost., lichá, prostá

omez. shora i zdola

$y = \operatorname{arccotg} x$

$Df = R$

$Hf = (0; \pi)$

kles., prostá, ani S ani L

omez. shora i zdola

$\lim_{x \to +\infty} f(x) = 0$

$\lim_{x \to -\infty} f(x) = \pi$