2 zápočtová písemka na konci semestru!

Zápočet je > 60 %, písemka je 60 %, účasty za 40 %

$f: A \to B \quad \forall a \in A \; \exists! \, b \in B : (a, b) \in f$

$f(a) = b$

$\ln : \mathbb{R} \to \mathbb{R}$

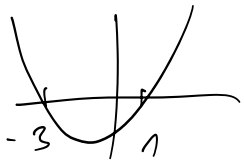
$Def(\ln) = \{ x \in \mathbb{R}, x > 0 \}$

Určete def. obor funkce: $f(x) = \log_4 \left(\sqrt{x^2 + 2x - 3} - x \right)$

$x^2 + 2x - 3 \geq 0$

$(x+3) \cdot (x-1) \geq 0$

$x = -3, +1$



$(-\infty, -3\rangle \cup \langle 1, \infty)$

$\sqrt{x^2 + 2x - 3} > x$

pro $x \geq 0$

$x^2 + 2x - 3 > x^2$

$x > \frac{3}{2}$

$\left(\frac{3}{2}; \infty \right)$

✓

$\sqrt{x^2 + 2x - 3} - x > 0$

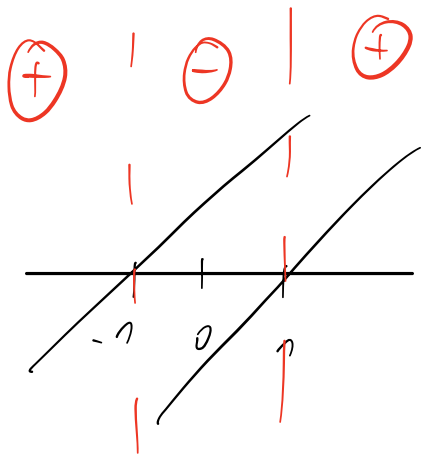
$Df(x): (-\infty; -3\rangle \cup \left(\frac{3}{2}; \infty \right)$

Řešte definiční obory!

a) $\log\left(\frac{x+1}{x-1}\right) > 0$

$x \neq 1$

b) $\frac{x-2}{2x-8} \geq 1$



a) $\frac{x+1}{x-1} > 0$

Df: $(-\infty; -1) \cup (1, \infty)$

H(f) > 0: Argument musí být > 1 : $(1, \infty)$

$\frac{x+1}{x-1} > 1$

$(1, \infty)$:

$x+1 > x-1$

$1 > -1$ ✓

$(-\infty; -1)$:

→ jelikož násobím záporným číslem!!!

$x+1 < x-1$

$1 < -1$ X

Opět rozdělím interval!!

b) $\frac{x-2}{2x-8} \geq 1$

$2x-8 \neq 0$

$2x \neq 8$

$x \neq 4$

$2x-8 > 0$: $x > 4$

$x-2 \geq 2x-8$

$x \leq 6$

$x \in (4; 6\rangle$

$2x-8 < 0$: $x < 4$

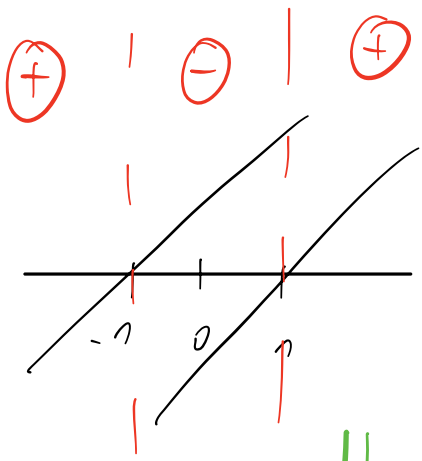
$x-2 \leq 2x-8$

$x \geq 6$

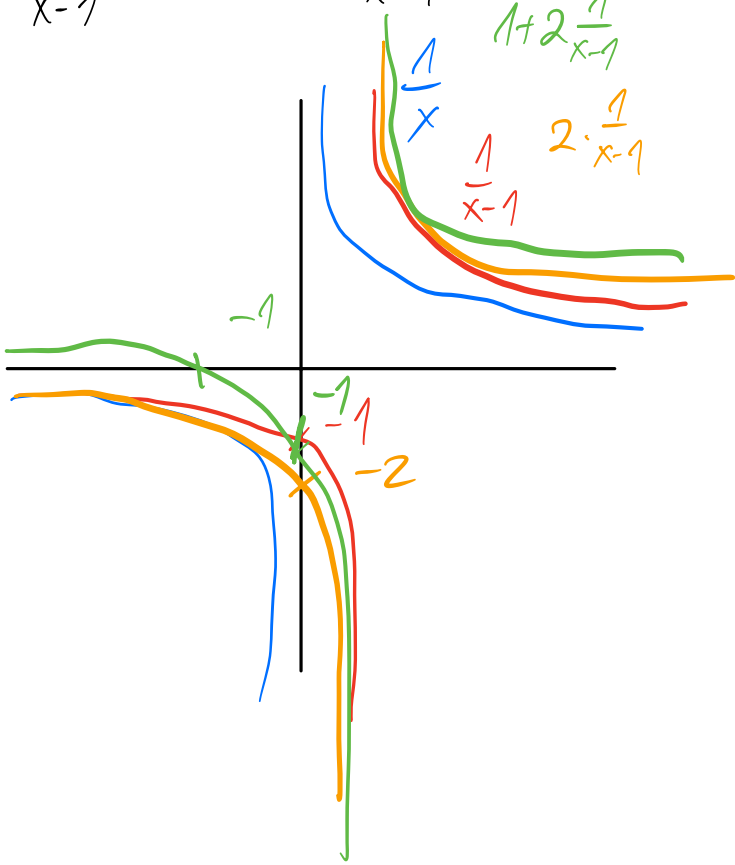
$x \in \emptyset$

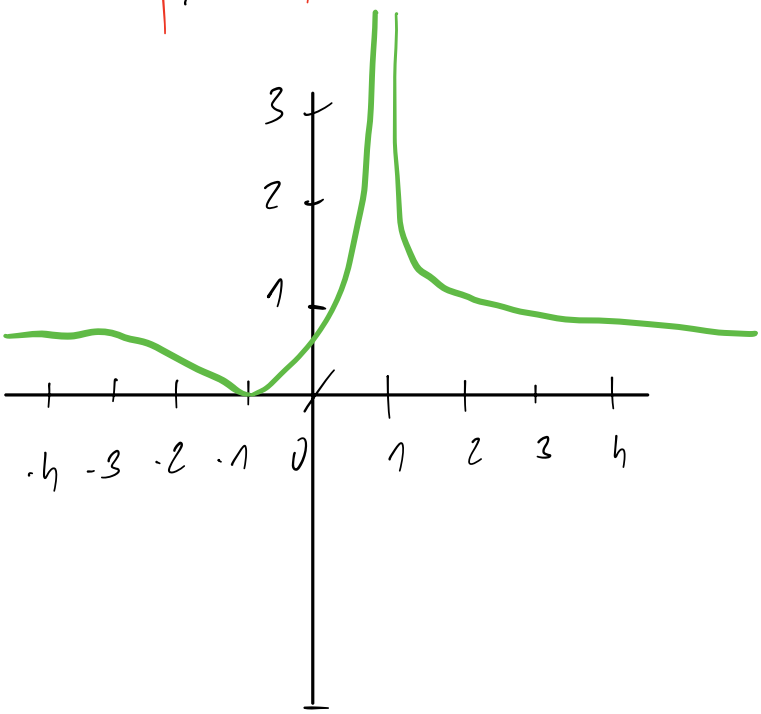
$H(f) = (4; 6\rangle$

a) $f(x) = \left| \frac{x+1}{x-1} \right|$



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

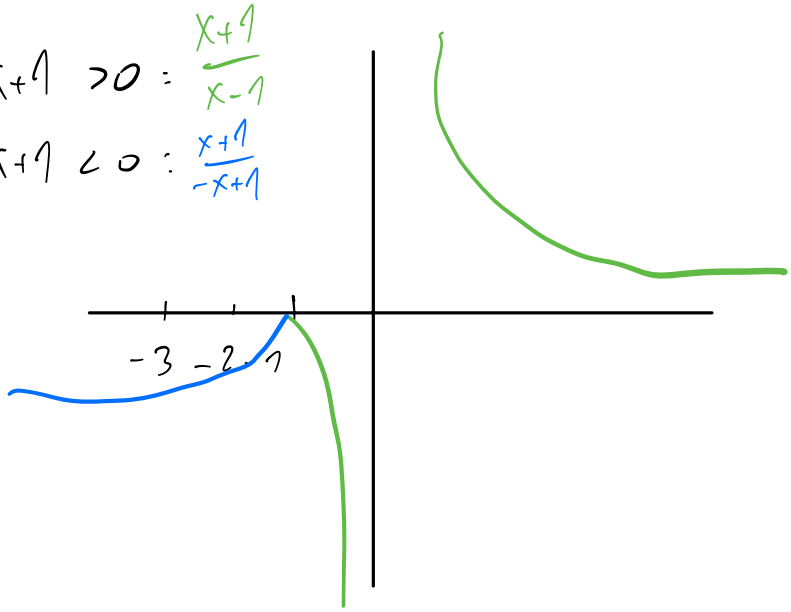




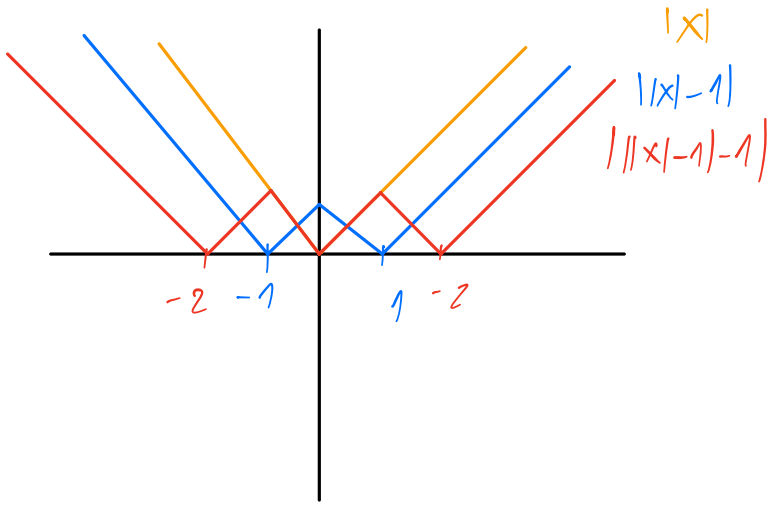
b) $g(x) = \frac{|x+1|}{x-1}$

$x+1 > 0 : \frac{x+1}{x-1}$

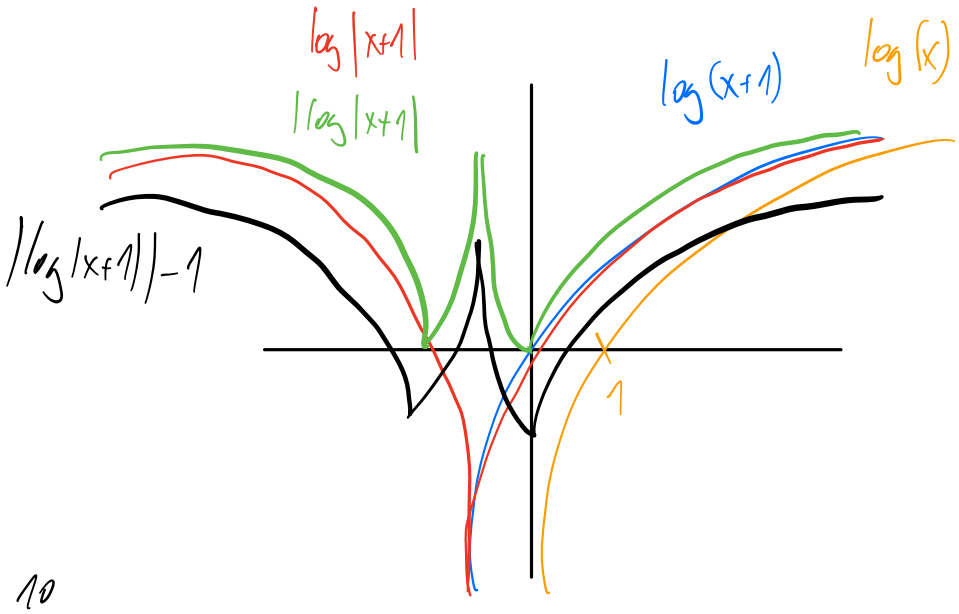
$x+1 < 0 : \frac{x+1}{-x+1}$



a) $f(x) = ||x|-1|-1|$



b) $g(x) = |\log|x+1||-1$



$|\log|x+1|| = \pm 1$

$\log x = \pm 1 \iff x = \begin{cases} 10 \\ 0{,}1 \end{cases}$

Spočetnost racionálních čísel $\mathbb{Q}$:

$\mathcal{E}$: 0 2 2 3 3 3

Zlomky: $\frac{0}{1}, \frac{1}{1}, \frac{0}{2}, \frac{1}{2}, \frac{2}{1}, \frac{0}{3}$