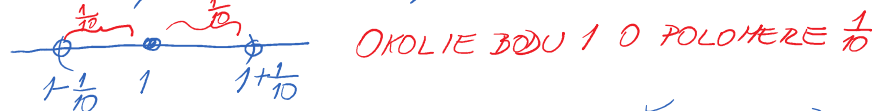


$$\lim_{x \rightarrow 1=a} \sqrt{x-2}$$

$$D(f): x-2 \geq 0 \Leftrightarrow x \geq 2$$

$$D(f) = [2, \infty)$$

$$O_{\frac{1}{10}}(1) = (1 - \frac{1}{10}, 1 + \frac{1}{10}) = (0,9; 1,1)$$



V TOHTO OKOLÍ BODU 1 NELEŽÍ ŽIADEN BOD
z $D(f) \Rightarrow a=1$ NE JE HROMADNÝ BOD $D(f)$

$$\Rightarrow \lim_{x \rightarrow 1} \sqrt{x-2} \nexists$$

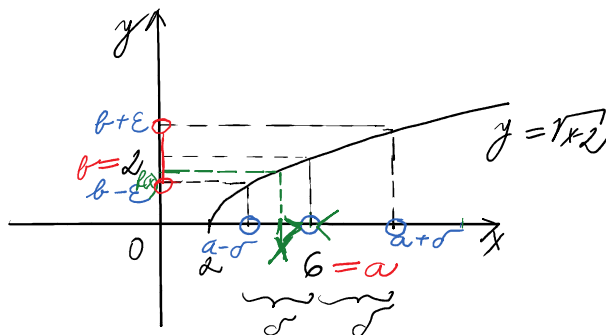
$$O_{\frac{1}{10}}^{\circ}(1) = (0,9; 1,1) - \{1\} = (0,9; 1) \cup (1; 1,1)$$



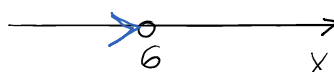
DEFINÍCIA LIMITY

$$\lim_{x \rightarrow a} f(x) = b$$

$$\lim_{x \rightarrow 6=a} \sqrt{x-2} = 2=b$$



$$\lim_{x \rightarrow 6^-} \sqrt{x-2} = 2$$



LIMITA ZĽAVA

$$\lim_{x \rightarrow 6^+} \sqrt{x-2} = 2$$



LIMITA SPRAVA

$$\lim_{x \rightarrow a^-} f(x) = \lim_{x \rightarrow a^+} f(x) \Rightarrow \lim_{x \rightarrow a} f(x) \nexists$$

TYPPY NEURČITÝCH VÝRAZOV

$$\frac{0}{0}, \pm \frac{\infty}{\infty}, 0 \cdot \infty, 1^{\infty}, 0^0$$

$$PR1 \quad \lim_{x \rightarrow 3} \frac{x^2 - 9}{x^2 - 5x + 6} = \frac{0}{0} = \lim_{x \rightarrow 3} \frac{(x-3)(x+3)}{(x-3)(x-2)} = \frac{6}{1} = \underline{\underline{6}}$$



$$PR2 \quad \lim_{x \rightarrow 0} \frac{\sin x \cdot \lg x}{1 - \cos^2 x} = \frac{0}{0} = \lim_{x \rightarrow 0} \frac{\sin x \cdot \frac{\sin x}{\cos x}}{\sin^2 x} =$$

$$= \lim_{x \rightarrow 0} \frac{\sin^2 x}{\cos x \sin^2 x} = \underline{\underline{1}}$$

$\cos^2 x + \sin^2 x = 1$
 $1 - \cos^2 x = \sin^2 x$

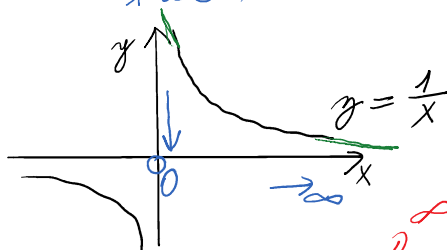
$$PR3 \quad \lim_{x \rightarrow 0} \frac{\sin 7x}{\sin 5x} = \frac{0}{0} = \lim_{x \rightarrow 0} \frac{\sin 7x \cdot \frac{1}{x}}{\sin 5x \cdot \frac{1}{x}} =$$

$$= \lim_{x \rightarrow 0} \frac{\frac{\sin 7x}{x} \cdot \frac{7}{7}}{\frac{\sin 5x}{x} \cdot \frac{5}{5}} = \lim_{x \rightarrow 0} \frac{7 \cdot \frac{\sin 7x}{7x}}{5 \cdot \frac{\sin 5x}{5x}} = \frac{7}{5}$$

$\lim_{t \rightarrow 0} \frac{\sin t}{t} = 1$ $\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$

$$PR4 \quad \lim_{x \rightarrow \infty} \frac{4x^2 - 3x + 2}{3x^2 + 2x} = \frac{\infty}{\infty} = \lim_{x \rightarrow \infty} \frac{x^2(4 - \frac{3}{x} + \frac{2}{x^2})}{x^2(3 + \frac{2}{x})} = \frac{4}{3}$$

$\lim_{x \rightarrow \infty} x = \infty$
 $\lim_{x \rightarrow \infty} \frac{1}{x} = 0$

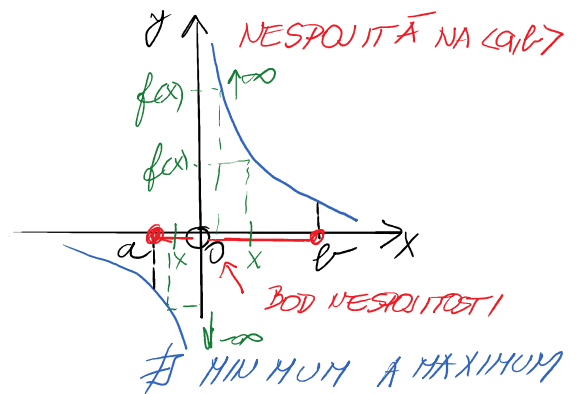
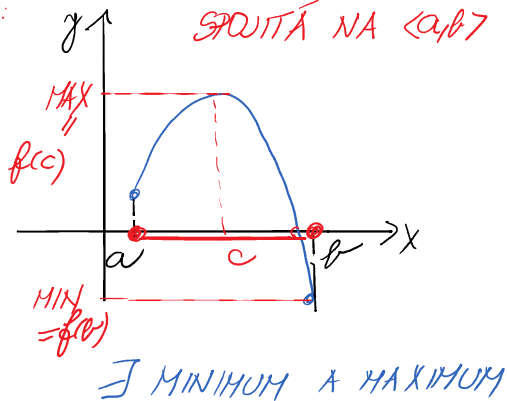


$$PR4 \quad \lim_{x \rightarrow \infty} \frac{4x^3 - 3x + 2}{3x^2 + 2x} = \frac{\infty}{\infty} = \lim_{x \rightarrow \infty} \frac{x^3(4 - \frac{3}{x} + \frac{2}{x^2})}{x^2(3 + \frac{2}{x})} = \frac{\infty}{\infty}$$

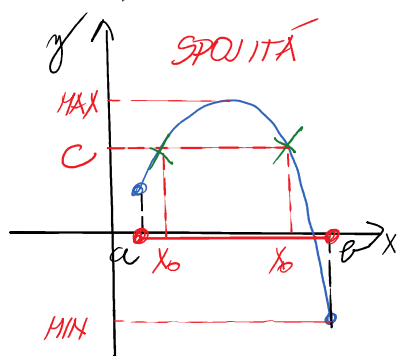
$$PR5 \quad \lim_{x \rightarrow \infty} \frac{4x^2 - 3x + 2}{3x^3 + 2x} = \frac{\infty}{\infty} = \lim_{x \rightarrow \infty} \frac{x^3(\frac{4}{x} - \frac{3}{x^2} + \frac{2}{x^3})}{x^3(3 + \frac{2}{x^2})} = \frac{0}{\infty} = 0$$

VLASTNOSTI SPOJITÝCH FUNKCIÍ NA UZAVŘETOM INTERVALE

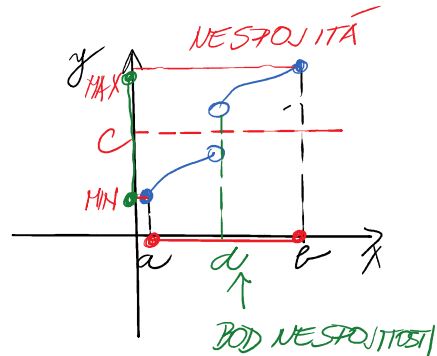
VĚTA 1: SPOJITÁ NA $\langle a, b \rangle$



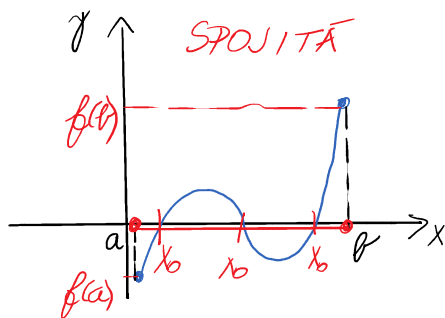
VĚTA 2: $\forall c \in \langle \text{MIN}, \text{MAX} \rangle \exists x_0 \in \langle a, b \rangle : f(x_0) = c$



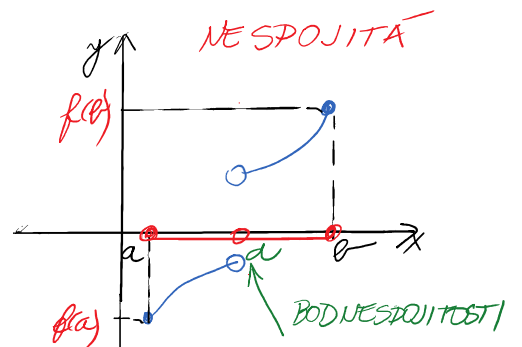
$\exists x_0 \in \langle a, b \rangle : f(x_0) = c$



VĚTA 3 $f(a) \cdot f(b) < 0 \Rightarrow \exists x_0 \in \langle a, b \rangle : f(x_0) = 0$



$f(a) < 0 \quad f(b) > 0$
 $f(a) \cdot f(b) < 0$
 $\exists x_0 : f(x_0) = 0$



$f(a) < 0 \quad f(b) > 0$
 $f(a) \cdot f(b) < 0$
 $\nexists x_0 : f(x_0) = 0$