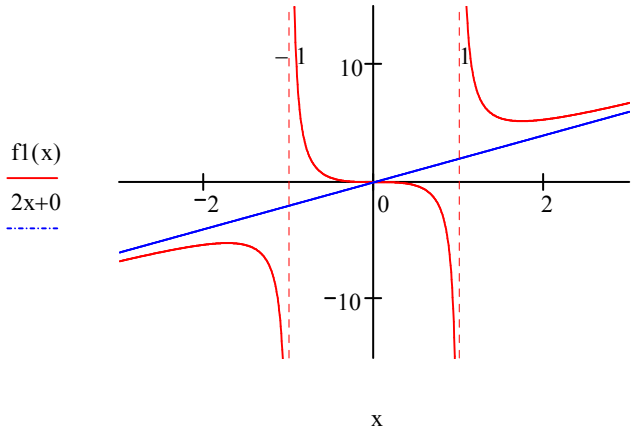
Priebeh funkcie

$$f1(x) := \frac{2x^3}{x^2 - 1}$$

derivácie

$$\frac{d^1}{dx^1} f1(x) \text{ simplify } \rightarrow 2 \cdot x^2 \cdot \frac{x^2 - 3}{\left(x^2 - 1\right)^2}$$

$$\frac{d^2}{dx^2} f1(x) \text{ simplify } \rightarrow 4 \cdot x \cdot \frac{x^2 + 3}{\left(x^2 - 1\right)^3}$$



asymptoty so smernicou a bez smernice

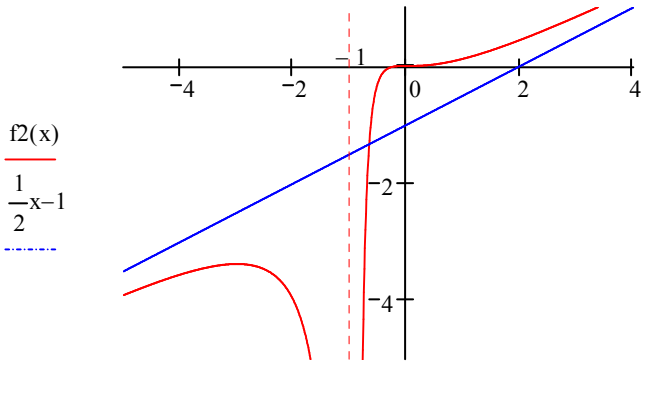
$$\lim_{x \to -\infty} \frac{f1(x)}{x} \rightarrow 2 \qquad \lim_{x \to -\infty} f1(x) - 2x \rightarrow 0 \qquad \lim_{x \to -1^-} f1(x) \rightarrow -\infty \qquad \lim_{x \to -1^+} f1(x) \rightarrow \infty$$

$$\lim_{x \to \infty} \frac{f1(x)}{x} \rightarrow 2 \qquad \lim_{x \to \infty} f1(x) - 2x \rightarrow 0 \qquad \lim_{x \to 1^-} f1(x) \rightarrow -\infty \qquad \lim_{x \to 1^+} f1(x) \rightarrow \infty$$

$$f2(x) := \frac{x^3}{2\,(x+1)^2}$$

$$\frac{d^1}{dx^1} f2(x) \text{ simplify } \rightarrow \frac{1}{2} \cdot x^2 \cdot \frac{x+3}{(x+1)^3}$$

$$\frac{d^2}{dx^2} f2(x) \text{ simplify } \rightarrow 3 \cdot \frac{x}{(x+1)^4}$$



$$\lim_{x \to -\infty} \frac{f2(x)}{x} \rightarrow \frac{1}{2} \qquad \lim_{x \to -\infty} f2(x) - \frac{1}{2}x \rightarrow -1 \qquad \lim_{x \to -1^-} f1(x) \rightarrow -\infty \qquad \lim_{x \to -1^+} f1(x) \rightarrow \infty$$

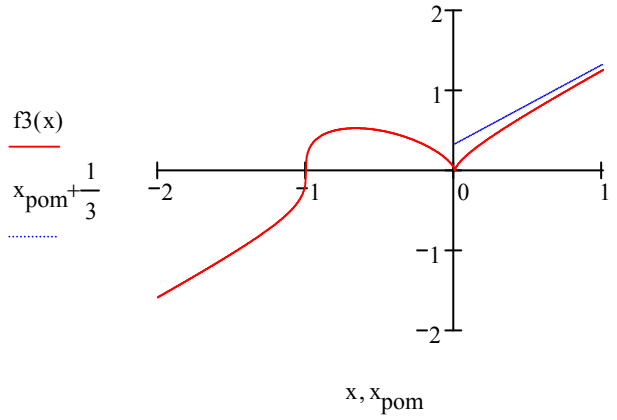
$$\lim_{x \to \infty} \frac{f2(x)}{x} \rightarrow \frac{1}{2} \qquad \lim_{x \to \infty} f2(x) - \frac{1}{2}x \rightarrow -1$$

$$f3(x) := \sqrt[3]{x^3 + x^2}$$

$$x_{pom} := 0, 0.01 .. 1$$

$$\frac{d^1}{dx^1} f3(x) \text{ simplify } \rightarrow \frac{1}{3} \cdot x \cdot \frac{3 \cdot x + 2}{\left[x^2 \cdot (x+1)\right]^{\frac{2}{3}}}$$

$$\frac{d^2}{dx^2} f3(x) \text{ simplify } \rightarrow \frac{-2}{9 \cdot (x+1) \cdot \left[x^2 \cdot (x+1)\right]^{\frac{2}{3}}}$$



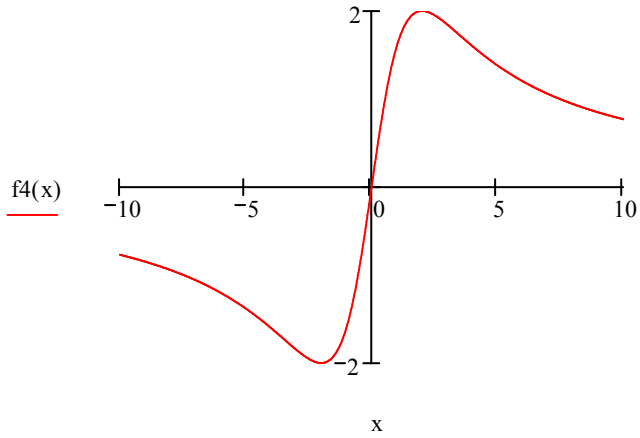
$\lim_{x \to \infty} \frac{f3(x)}{x} \to 1$ $\lim_{x \to \infty} f3(x) - 1x \to \frac{1}{3}$ $\lim_{x \to 0^-} \frac{d^1}{dx^1} f3(x) \to -\infty$ $\lim_{x \to -1} \frac{d^1}{dx^1} f3(x) \to \infty$

$\lim_{x \to -\infty} f3(x) - x \to \infty$ $\lim_{x \to 0^+} \frac{d^1}{dx^1} f3(x) \to \infty$

$f4(x) := \frac{8x}{x^2 + 4}$

$\frac{d^1}{dx^1} f4(x)\ \text{simplify} \to -8 \cdot \frac{x^2 - 4}{(x^2 + 4)^2}$

$\frac{d^2}{dx^2} f4(x)\ \text{simplify} \to 16 \cdot x \cdot \frac{x^2 - 12}{(x^2 + 4)^3}$



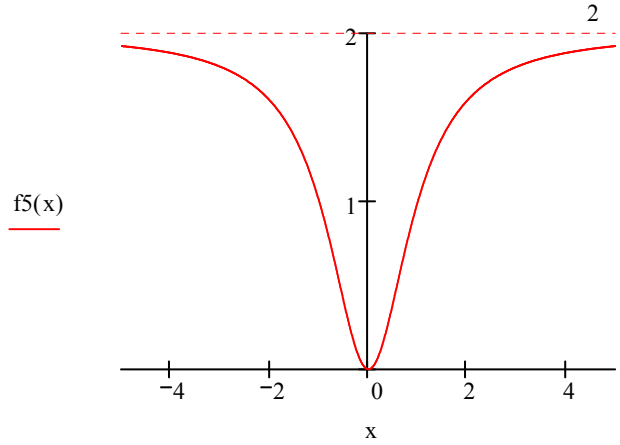
$\lim_{x \to -\infty} \frac{f4(x)}{x} \to 0$ $\lim_{x \to -\infty} f4(x) - 0x \to$

$\lim_{x \to \infty} \frac{f4(x)}{x} \to 0$ $\lim_{x \to \infty} f4(x) - 0x \to 0$

$f5(x) := \frac{2x^2}{x^2 + 1}$

$\frac{d^1}{dx^1} f5(x)\ \text{simplify} \to 4 \cdot \frac{x}{(x^2 + 1)^2}$

$\frac{d^2}{dx^2} f5(x)\ \text{simplify} \to -4 \cdot \frac{3 \cdot x^2 - 1}{(x^2 + 1)^3}$



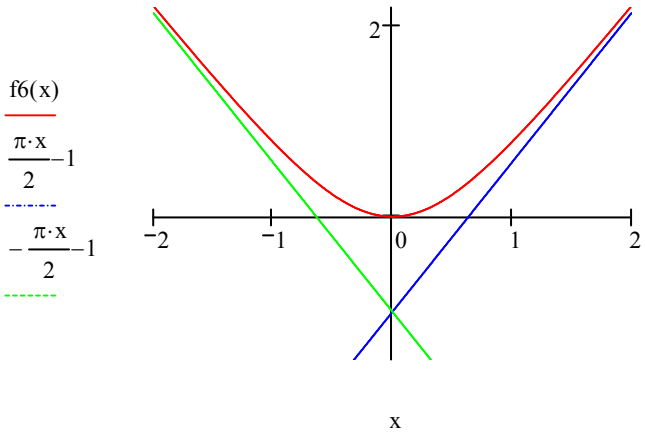
$\lim_{x \to -\infty} \frac{f5(x)}{x} \to 0$ $\lim_{x \to -\infty} f5(x) - 0x$

$\lim_{x \to \infty} \frac{f5(x)}{x} \to 0$ $\lim_{x \to \infty} f5(x) - 0x \to 2$

$f6(x) := x \cdot \text{atan}(x)$

$\frac{d^1}{dx^1} f6(x)\ \text{simplify} \to \frac{\text{atan}(x) \cdot x^2 + \text{atan}(x) + x}{x^2 + 1}$

$\frac{d^2}{dx^2} f6(x)\ \text{simplify} \to \frac{2}{(x^2 + 1)^2}$



$\lim_{x \to \infty} \frac{f6(x)}{x} \to \frac{1}{2} \cdot \pi$ $\lim_{x \to \infty} f6(x) - \frac{\pi}{2} x \to$ -

$\lim_{x \to -\infty} \frac{f6(x)}{x} \to \frac{-1}{2} \cdot \pi$ $\lim_{x \to -\infty} f6(x) + \frac{\pi}{2} x \to -1$