Př:

$$\lim_{x\to 0} x\sin\frac{1}{x} = 0$$

Př:

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

$$\lim_{x\to -3}\frac{3x^2+11x+6}{x^3+27} = \lim_{x\to -3}\frac{3x-2}{1x^2-3x+9} = \frac{-11}{27}$$

$$\lim_{x\to \pi}\frac{\mathrm{tg}x}{\sin 2x} = \lim_{x\to \pi}\frac{\sin x}{2\sin x\cos x\cos x} = \lim_{x\to \pi}\frac{1}{2\cos x\cos x} = \frac{1}{2}$$

$$\lim_{x\to \frac{\pi}{4}}\frac{\sin x-\cos x}{\cos 2x} = \lim_{x\to \frac{\pi}{4}}\frac{\sin x-\cos x}{\cos^2 x-\sin^2 x} = \lim_{x\to \frac{\pi}{4}}\frac{-1}{\cos x+\sin x} = -1$$

Př:

$$\lim_{x\to 6}\frac{x-6}{\sqrt{x+3}-3} = \lim_{x\to 6}\frac{x-6}{x+3-9}(\sqrt{x+3}+3) = \sqrt{9}+3 = 6$$

$$\lim_{x\to 0}\frac{\sqrt{x^2+1}-1}{\sqrt{x^2+16}-4} = \lim_{x\to 0}\frac{\sqrt{x^2+1}-1}{x^2+16-16}(\sqrt{x^2+16}+4) = \lim_{x\to 0}\frac{\sqrt{x^2+1}-1}{x^2}(\sqrt{x^2+16}+4) =$$

$$= \lim_{x\to 0}\sqrt{\frac{x^2+1}{x^4}}(\sqrt{x^2+16}+4) = \lim_{x\to 0}\sqrt{\frac{x^2}{x^4}}(\sqrt{x^2+16}+4) = \lim_{x\to 0}\sqrt{\frac{1}{x^2}}(\sqrt{x^2+16}+4) = 8$$

$$\lim_{x\to -1}\frac{x^3+1}{\sqrt{x^2-3x}+2x} = \lim_{x\to -1}\frac{x^3+1}{x^2-3x-4x^2}\cdot\sqrt{x^2-3x}-2x =$$

$$= \lim_{x\to -1}\frac{x^3+1}{-3x(1+x)}\cdot\sqrt{x^2-3x}-2x = \lim_{x\to -1}\frac{x^2-x+1}{-3x}\cdot\sqrt{x^2-3x}-2x = \frac{1}{3}(2+2) = \frac{4}{3}$$

$$\lim_{x\to 1}\frac{2-\sqrt{x+3}}{x^3-1} = \lim_{x\to 1}\frac{4-x-3}{(x-1)(x^2+x+1)(2+\sqrt{x+3}} = \lim_{x\to 1}\frac{-1}{(x^2+x+1)(2+\sqrt{x+3}} = \frac{-1}{12}$$

Př: $0; \frac{3}{5}; +\infty; +\infty$

Př:

Př:

$$\lim_{x\to -\infty}(\sqrt{x^2+4}+x) = \lim_{x\to \infty}(\sqrt{x^2+4}-x) = \lim_{x\to \infty}\frac{x^2-x^2+4}{\sqrt{x^2+4}+x} = 0$$

Př:

$$\lim_{x\to +\infty}\frac{\sin 5x}{x} = 0$$

$$\lim_{x\to 0} x\cos\frac{1}{x} = 0$$