

Zadaća - vježbe 1

Limesi

Zadatak. Izračunajte limese

$$\text{a) } \lim_{x \rightarrow \infty} \frac{x^3 - 4x + 27}{2x^3 + 2x^2 + 6}$$

$$\text{b) } \lim_{x \rightarrow \infty} \frac{x^6 + 3x^4 + 7x}{x^4 + x^3 - 5x^2 - x + 2}$$

$$\text{c) } \lim_{x \rightarrow \infty} \frac{x^2 + 2x + 1}{x^5 + x^3 - 4x + 6}$$

Što općenito možemo zaključiti o limesima oblika $\lim_{x \rightarrow \pm\infty} \frac{p(x)}{q(x)}$, gdje su p i q polinomi?

Zadatak. Izračunajte limese

$$\text{a) } \lim_{x \rightarrow -\infty} \frac{x}{\sqrt{x^2 + 1}}$$

$$\text{b) } \lim_{x \rightarrow \infty} \frac{\sqrt{x} + \sqrt[3]{x} + \sqrt[5]{x}}{\sqrt{2x + 1}}$$

Zadatak. Izračunajte limese

$$\text{a) } \lim_{x \rightarrow 0} \frac{\sin(\sqrt{x+1} - 1)}{x}$$

$$\text{b) } \lim_{x \rightarrow 0} \frac{1 - \cos(1 - \cos x)}{\sin^2 x}$$

$$\text{c) } \lim_{x \rightarrow \frac{\pi}{3}} \frac{\sin x - \sqrt{3} \cos x}{1 - 2 \cos x}$$

$$\text{d) } \lim_{x \rightarrow \infty} \frac{\sin x}{x}$$