

Matematička analiza 1 - 9. auditorna vježba - 30.10.2023.

Zadatak 1 Izračunajte:

$$\begin{array}{ll} \text{a. } \lim_{x \rightarrow +\infty} \frac{2x+1}{x+\sqrt{4x^2+3}} & \text{b. } \lim_{x \rightarrow -\infty} \frac{2x+1}{x+\sqrt{4x^2+3}} \\ \text{c. } \lim_{x \rightarrow +\infty} \frac{x \operatorname{arctg} x}{x+\sqrt{x^2+x+1}}, & \text{d. } \lim_{x \rightarrow -\infty} \frac{x \operatorname{arctg} x}{x+\sqrt{x^2+x+1}}. \end{array}$$

Zadatak 2 Izračunajte jednostrane limese:

$$\begin{array}{ll} \text{a. } \lim_{x \rightarrow -2^-} \frac{x+1}{(x+2)^2}, & \text{b. } \lim_{x \rightarrow -2^+} \frac{x+1}{(x+2)^2}, \\ \text{c. } \lim_{x \rightarrow 1^-} \frac{1}{x^2-3x+2}, & \text{d. } \lim_{x \rightarrow 1^+} \frac{1}{x^2-3x+2}. \end{array}$$

Zadatak 3 Ispitajte postojanje li sljedeći limesi:

$$\begin{array}{l} \text{a. } \lim_{x \rightarrow -2} e^{\frac{x-2}{x+2}}, \\ \text{b. } \lim_{x \rightarrow 1} \operatorname{th} \frac{1}{2-2x}. \end{array}$$

Zadatak 4 Odredite parametar $a \in \mathbb{R}$ tako da funkcija

$$f(x) = \begin{cases} a \cdot \frac{x^2-x}{x^2-1}, & x > 1, \\ x^2+x, & x \leq 1 \end{cases}$$

bude neprekinuta na \mathbb{R} .

Zadatak 5 Odredite parametre $a, b \in \mathbb{R}$ tako da funkcija

$$f(x) = \begin{cases} a + \operatorname{arctg} \left(\frac{1}{x}\right), & x < 0, \\ b, & x = 0, \\ \operatorname{arctg} \left(\frac{1}{x}\right), & x > 0 \end{cases}$$

bude neprekinuta na \mathbb{R} .