

Prezime, ime, br. indeksa: _____

U svakom zadatku u kom je dato više odgovora treba zaokružiti tačne odgovore tj. slova ili brojeve ispred tačnih odgovora. U jednom istom zadatku broj tačnih odgovora može biti 0,1,2,3,...,svi. U nekim zadacima ostavljena su prazna mesta za upisivanje odgovora.

• Ako je $\lim_{x \rightarrow x_0} f(x) = a$, $\lim_{x \rightarrow x_0} g(x) = b$, $g(x) \neq 0$, $b \neq 0$, $\alpha, \beta, c \in \mathbb{R}$, tada je:

- 1) $\lim_{x \rightarrow x_0} \frac{f(x)}{g(x)} = \frac{b}{a}$ 2) $\lim_{x \rightarrow x_0} (\alpha f(x) - \beta g(x)) = \alpha a - \beta b$ 3) $\lim_{x \rightarrow x_0} (f(x) \cdot g(x)) = \lim_{x \rightarrow x_0} f(x) + \lim_{x \rightarrow x_0} g(x)$
 4) $\lim_{x \rightarrow x_0} (f(x) + g(x)) = \lim_{x \rightarrow x_0} g(x) + \lim_{x \rightarrow x_0} f(x)$ 5) $\lim_{x \rightarrow x_0} \frac{f(x)}{g(x)} = \frac{a}{b}$ 6) $\lim_{x \rightarrow x_0} (c \cdot g(x)) = c \lim_{x \rightarrow x_0} f(x)$
 7) $\lim_{x \rightarrow x_0} (f(x) \cdot g(x)) = \lim_{x \rightarrow x_0} f(x) \cdot \lim_{x \rightarrow x_0} g(x)$ 8) $\lim_{x \rightarrow x_0} (c \cdot f(x)) = c \cdot a$ 9) $\lim_{x \rightarrow x_0} (c \cdot f(x))^2 = c \lim_{x \rightarrow x_0} (f(x))^2$
 10) $\lim_{x \rightarrow x_0} (\alpha f(x) + \beta g(x)) = \beta \lim_{x \rightarrow x_0} f(x) + \alpha \lim_{x \rightarrow x_0} g(x)$

• Zaokružiti tačne izraze:

- 1) $\lim_{x \rightarrow \infty} q^x = 1$, za $q = 1$ 2) $\lim_{x \rightarrow \infty} q^x = +\infty$, za $q = 3$ 3) $\lim_{x \rightarrow 0} \frac{\sin x}{x} = 0$, 4) $\lim_{x \rightarrow 0} (1+x)^{\frac{1}{x}} = 1$,
 5) $\lim_{x \rightarrow \infty} q^x = +\infty$, za $q > 1$ 6) $\lim_{x \rightarrow \infty} q^x = 0$, za $|q| < 1$ 7) $\lim_{x \rightarrow \infty} (1 + \frac{1}{x})^x = e$, 8) $\lim_{x \rightarrow \infty} q^x = 0$, za $|q| \leq 1$
 9) $\lim_{x \rightarrow 0} (1+x)^x = e$, 10) $\lim_{x \rightarrow 0} \frac{x}{\sin x} = 1$, 11) $\lim_{x \rightarrow \infty} \frac{P(x)}{Q(x)} = 0$, $\deg(P) < \deg(Q)$
 12) $\lim_{x \rightarrow \infty} \frac{P(x)}{Q(x)} = 0$, $\deg(P) = \deg(Q)$ 13) $\lim_{x \rightarrow \infty} \frac{P(x)}{Q(x)} = 0$, $\deg(P) > \deg(Q)$

• Zaokruži brojeve ispred neodređenih izraza:

- 1) " $\infty - \infty$ " 2) " $\infty \cdot \infty$ " 3) " $\frac{0}{0}$ " 4) " $\frac{0}{-\infty}$ " 5) " 0^∞ " 6) " $\frac{1}{0}$ " 7) " 1^∞ " 8) " $\frac{0}{0}$ " 9) " ∞^0 " 10) " $\infty \cdot 0$ "
 11) " $\frac{\infty}{\infty}$ " 12) " 0^0 " 13) " $\infty + \infty$ " 14) " 3^∞ " 15) " $\frac{1}{0}$ " 16) " $\frac{e}{\infty}$ " 17) " e^∞ " 18) " $\ln 0$ " 19) " $0 \cdot \infty$ "
 20) " ∞^∞ " 21) " $\frac{\infty}{0}$ " 22) " $\ln \infty$ " 23) " $\operatorname{tg} \frac{\pi}{2}$ "

• Zaokruži brojeve ispred određenih izraza i napisati njihovu vrednost:

- 1) " 1^∞ " = 2) " $\frac{0}{0}$ " = 3) " $\infty - \infty$ " = 4) " $7^{-\infty}$ " = 5) " $\frac{\infty}{\infty}$ " =
 6) " $\frac{1}{\infty}$ " = 7) " $\frac{0}{\infty}$ " = 8) " $\ln 0$ " = 9) " $3^{-\infty}$ " = 10) " $\ln 1$ " =
 11) " 0^0 " = 12) " $0 \cdot \infty$ " = 13) " $\ln \infty$ " = 14) " 2^∞ " = 15) " 0^∞ " =
 16) " ∞^0 " = 17) " $\ln e$ " = 18) " $\infty + \infty$ " = 19) " $\frac{1}{0}$ " = 20) " $\infty \cdot \infty$ " =
 21) " ∞^∞ " = 22) " $\frac{\infty}{0}$ " = 23) " $\operatorname{arctg}(+\infty)$ " = 24) " $\operatorname{arctg}(-\infty)$ " =

• Izračunati:

- 1) $\lim_{x \rightarrow 3} (1 + \frac{1}{x})^x =$ 2) $\lim_{x \rightarrow 0} (1+x)^{\frac{1}{x}} =$ 3) $\lim_{x \rightarrow \infty} (1 + \frac{1}{x})^x =$
 4) $\lim_{x \rightarrow e} (1+x)^x =$ 5) $\lim_{x \rightarrow \infty} (\frac{x^2 + 3}{x^2 - 2})^{2x^2} =$ 6) $\lim_{x \rightarrow \infty} (1+x)^{\frac{1}{x}} =$
 7) $\lim_{x \rightarrow \frac{\pi}{4}} \frac{\sin x}{x} =$ 8) $\lim_{x \rightarrow \infty} (\frac{3}{7})^x =$ 9) $\lim_{x \rightarrow \infty} (\frac{4}{3})^x =$
 10) $\lim_{x \rightarrow 0} (x)^{\frac{1}{x}} =$ 11) $\lim_{x \rightarrow \infty} \frac{3x^3 + x - 2}{2x^3 - 2} =$ 12) $\lim_{x \rightarrow \infty} 2^{-x} =$
 13) $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} =$ 14) $\lim_{x \rightarrow 2} \frac{4 - x^2}{x - 2} =$ 15) $\lim_{x \rightarrow \infty} 1^x =$

• Izračunati:

$$1) \lim_{x \rightarrow \infty} \frac{x^7 - 2x^2 + 3}{2x^3 + 2x^2 - x} =$$

$$3) \lim_{x \rightarrow \infty} \frac{-3x^3 - 2x^2 + 1}{5x^3 - x^2 + 2} =$$

$$5) \lim_{x \rightarrow \infty} \frac{x^4}{\ln 3x} =$$

$$7) \lim_{x \rightarrow 0} \frac{\sin 5x}{\sin 2x} =$$

$$9) \lim_{x \rightarrow 0} \frac{\ln(5x + 1)}{x} =$$

$$10) \lim_{x \rightarrow \infty} \left(\frac{2x^2 + 5}{x^2 - 3} \right)^{\frac{x^2}{x-1}} =$$

$$11) \lim_{x \rightarrow 1} \left(\frac{x^3 + 2x + 3}{x^3 + 3} \right)^{\frac{-2x^2}{x+3}} =$$

$$12) \lim_{x \rightarrow \infty} \left(\frac{x^2 + 5}{x^2 - 3} \right)^{\frac{x^2}{x-1}} =$$

$$13) \lim_{x \rightarrow 0} \frac{\sqrt{x+4} - 2}{\sin 3x} =$$

$$14) \lim_{x \rightarrow \infty} (\sqrt{x^2 + 1} - \sqrt{x^2 - x + 1}) =$$

• Proveriti da li je funkcija $f(x) = \begin{cases} (1+x)^{\frac{1}{x}}, & x \neq 0 \\ e, & x = 0 \end{cases}$ neprekidna u tački $x = 0$.

• Proveriti da li je funkcija $f(x) = \begin{cases} \frac{x^2-9}{x-3}, & x \neq 3 \\ 2, & x = 3 \end{cases}$ neprekidna u tački $x = 3$.

• Odrediti domen i nacrtati grafik funkcije

$$1) f(x) = \ln x$$

$$2) f(x) = \sqrt{x}$$

$$3) f(x) = \sqrt{x+1}$$

$$4) f(x) = \sqrt{-x}$$

$$5) f(x) = \sqrt{1-x}$$

$$6) f(x) = e^x$$

$$7) f(x) = e^{-x}$$

$$8) f(x) = \left(\frac{1}{2}\right)^x$$