

## 7. DOMAĆA ZADAĆA IZ MATEMATIKE 1

1. Mali Ivica (str. 151. – 1. zadatak)

2. Mali Ivica (str. 152. – a) i b) dio – 2. zadatak; c) i d) dio – 3. zadatak)

3. Mali Ivica (str. 152. – 4. zadatak)

4. Mali Ivica (str. 152. – 6. zadatak)

5. Mali Ivica (str. 152. – 7. zadatak)

6. Mali Ivica (str. 153. – 8. zadatak)

7. Mali Ivica (str. 153. – a) i b) dio – 9. zadatak)

$$c) \lim_{x \rightarrow 2^-} \frac{1}{x^2 - 3x + 2} = \lim_{x \rightarrow 2^-} \frac{1}{(x-2)(x-1)} = \frac{1}{0^- \cdot 1^-} = \frac{1}{0^-} = -\infty$$

$$d) \lim_{x \rightarrow 2^+} \frac{1}{x^2 - 3x + 2} = \lim_{x \rightarrow 2^+} \frac{1}{(x-2)(x-1)} = \frac{1}{0^+ \cdot 1^+} = \frac{1}{0^+} = \infty$$

8. Mali Ivica (str. 153. – a) i b) dio – 10. zadatak; c) i d) dio – 11. zadatak)

9.

$$a) \lim_{x \rightarrow -2^-} e^{\frac{x-2}{x+2}} = \lim_{x \rightarrow -2^-} e^{\frac{x+2-4}{x+2}} = \lim_{x \rightarrow -2^-} e^{1 - \frac{4}{x+2}} = e^{1 - \frac{4}{-2^- + 2}} = e^{1 - \frac{4}{0^-}} = e^{1 - (-\infty)} = e^{1 + \infty} = e^\infty = \infty$$

$$b) \lim_{x \rightarrow -2^+} e^{\frac{x-2}{x+2}} = \lim_{x \rightarrow -2^+} e^{\frac{x+2-4}{x+2}} = \lim_{x \rightarrow -2^+} e^{1 - \frac{4}{x+2}} = e^{1 - \frac{4}{-2^+ + 2}} = e^{1 - \frac{4}{0^+}} = e^{1 - \infty} = e^{-\infty} = \frac{1}{e^\infty} = \frac{1}{\infty} = 0$$

10.

$$a) \lim_{x \rightarrow 2^-} \arctg\left(\frac{x-3}{x-2}\right) = \arctg\left(\frac{2^- - 3}{2^- - 2}\right) = \arctg\left(\frac{-1^-}{0^-}\right) = \arctg(\infty) = \frac{\pi}{2}$$

$$b) \lim_{x \rightarrow 2^+} \arctg\left(\frac{x-3}{x-2}\right) = \arctg\left(\frac{2^+ - 3}{2^+ - 2}\right) = \arctg\left(\frac{-1^+}{0^+}\right) = \arctg(-\infty) = -\frac{\pi}{2}$$

11.

$$a) \lim_{x \rightarrow 0^-} \th\left(\frac{1}{x^2 - x}\right) = \lim_{x \rightarrow 0^-} \th\left(\frac{1}{x(x-1)}\right) = \th\left(\frac{1}{0^-(0^- - 1)}\right) = \th\left(\frac{1}{0^- \cdot (-1^-)}\right) = \th\left(\frac{1}{0^+}\right) = \th(\infty) = 1$$

$$b) \lim_{x \rightarrow 0^+} \th\left(\frac{1}{x^2 - x}\right) = \lim_{x \rightarrow 0^+} \th\left(\frac{1}{x(x-1)}\right) = \th\left(\frac{1}{0^+(0^+ - 1)}\right) = \th\left(\frac{1}{0^+ \cdot (-1^+)}\right) = \th(-\infty) = -1$$

12. Mali Ivica (str. 153. – 14. zadatak)

13. Mali Ivica (str. 154. – a) dio – 15. a) zadatak)

$$\begin{aligned} \text{b) } \lim_{x \rightarrow \infty} \left( \frac{3x+1}{3x-1} \right)^x &= \lim_{x \rightarrow \infty} \left( \frac{3x-1+2}{3x-1} \right)^x = \lim_{x \rightarrow \infty} \left( 1 + \frac{1}{\frac{3x-1}{2}} \right)^x = \lim_{x \rightarrow \infty} \left[ \left( 1 + \frac{1}{\frac{3x-1}{2}} \right)^{\frac{3x-1}{2}} \right]^{\frac{2x}{3x-1}} = \\ &= e^{\lim_{x \rightarrow \infty} \frac{2x}{3x-1}} = e^{\frac{2}{3}} = \sqrt[3]{e^2} \end{aligned}$$

14.

$$\begin{aligned} \text{a) } \lim_{x \rightarrow \infty} \left( \frac{x}{x+1} \right)^x &= \lim_{x \rightarrow \infty} \left( \frac{x+1-1}{x+1} \right)^x = \lim_{x \rightarrow \infty} \left( 1 + \frac{1}{-(x+1)} \right)^x = \lim_{x \rightarrow \infty} \left[ \left( 1 + \frac{1}{-(x+1)} \right)^{-(x+1)} \right]^{\frac{x}{-(x+1)}} = \\ &= e^{\lim_{x \rightarrow \infty} \frac{x}{-(x+1)}} = e^{-1} = \frac{1}{e} \end{aligned}$$

$$\begin{aligned} \text{b) } \lim_{x \rightarrow \infty} \left( \frac{x}{x+1} \right)^{x^2} &= \lim_{x \rightarrow \infty} \left( \frac{x+1-1}{x+1} \right)^{x^2} = \lim_{x \rightarrow \infty} \left( 1 + \frac{1}{-(x+1)} \right)^{x^2} = \\ &= \lim_{x \rightarrow \infty} \left[ \left( 1 + \frac{1}{-(x+1)} \right)^{-(x+1)} \right]^{\frac{x^2}{-(x+1)}} = e^{\lim_{x \rightarrow \infty} \frac{x^2}{-(x+1)}} = e^{-\infty} = \frac{1}{e^\infty} = 0 \end{aligned}$$

$$\begin{aligned} \text{c) } \lim_{x \rightarrow \infty} \left( \frac{x^2}{x^2+1} \right)^x &= \lim_{x \rightarrow \infty} \left( \frac{x^2+1-1}{x^2+1} \right)^x = \lim_{x \rightarrow \infty} \left( 1 + \frac{1}{-(x^2+1)} \right)^x = \\ &= \lim_{x \rightarrow \infty} \left[ \left( 1 + \frac{1}{-(x^2+1)} \right)^{-(x^2+1)} \right]^{\frac{x}{-(x^2+1)}} = e^{\lim_{x \rightarrow \infty} \frac{x}{-(x^2+1)}} = e^0 = 1 \end{aligned}$$

15. Mali Ivica (str. 154. – 16. zadatak)

16. Mali Ivica (str. 154. – 17. zadatak)

17. Mali Ivica (str. 154. – 18. zadatak)