

Matematika 2 - geo & zoo

9. zadaća

1. Funkcija $f : \mathbb{R} \setminus \{1\} \rightarrow \mathbb{R}$ je zadana sa

$$f(x) = \frac{x^2 - x^3}{x^3 - 1}.$$

Proširiti funkciju f do neprekidne funkcije $\tilde{f} : \mathbb{R} \rightarrow \mathbb{R}$.

Izračunati:

2. $\lim_{x \rightarrow 16} \frac{\sqrt{x}-4}{x-16}$
3. $\lim_{x \rightarrow 1} \frac{\sqrt[3]{x}-1}{\sqrt[4]{x}-1}$
4. $\lim_{x \rightarrow 3} \frac{\sqrt{x+6}-x}{x-3}$
5. $\lim_{x \rightarrow 7} \frac{2-\sqrt{x-3}}{x^2-49}$
6. $\lim_{x \rightarrow 0} \frac{\sqrt{1+x^2}-1}{x}$
7. $\lim_{x \rightarrow 0} \frac{\sqrt{1+x}-1}{x^2}$
8. $\lim_{x \rightarrow 5} \frac{\sqrt{x-1}-2}{x-5}$
9. $\lim_{x \rightarrow 1} \frac{x^2-\sqrt{x}}{\sqrt{x}-1}$
10. $\lim_{x \rightarrow \infty} \frac{\sqrt[3]{x^4+3}-\sqrt[5]{x^3+4}}{\sqrt[3]{x^7+1}}$
11. $\lim_{x \rightarrow \infty} (\sqrt{x+9} - x)$
12. $\lim_{x \rightarrow \infty} \frac{3^x-3^{-x}}{3^x+3^{-x}}$
13. $\lim_{x \rightarrow 0} \frac{\sin 3x}{4x}$
14. $\lim_{x \rightarrow 0} \frac{\operatorname{tg} 2x}{\sin 5x}$
15. $\lim_{x \rightarrow \infty} \frac{\operatorname{arctg} x}{x}$

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10. zadaća

U sljedećim zadacima odrediti $f'(x)$.

1. $f(x) = 2x^3 - 3x^2$

2. $f(x) = \frac{2x+3}{5}$

3. $f(x) = \frac{1}{\sqrt[3]{x^2}} - \frac{3}{x\sqrt[3]{x}}$

4. $f(x) = (x^2 - 2)\sqrt{x}$

5. $f(x) = \frac{x+2}{3x+4}$

6. $f(x) = \frac{x}{1-x^2}$

7. $f(x) = \frac{\sqrt{x}}{\sqrt{x+1}}$

8. $f(x) = (\sqrt{2} - \sqrt{x})^2$

9. $f(x) = \left(1 - \frac{1}{\sqrt[3]{x}}\right)^2$

10. $f(x) = \frac{\sin x}{1+\cos x}$

11. $f(x) = e^x \cos x$

12. $f(x) = x \arcsin x$

13. $f(x) = \frac{e^x}{x-1}$

14. $f(x) = \frac{1}{x} + 2 \ln x + \frac{\ln x}{x}$

15. $f(x) = 2^x \operatorname{arctg} x$

16. $f(x) = \frac{3^x \cos x}{x^2+x+1}$

17. $f(x) = \sin 3x$

18. $f(x) = e^{-x} + \operatorname{arctg}(x^2)$

19. $f(x) = \ln(\sin x)$

20. $f(x) = \arcsin \frac{2}{x}$