

Rješenja zadataka za dodatnu vježbu

1. $f'(x) = 3x^2 + 2x + 1$
2. $f(x) = e^x - \frac{1}{x^2}$
3. $f'(4) = \frac{33}{4}$
4. $f'(1) = \frac{3}{4}$
5. $f'(x) = \cos x - 3 \sin x$
6. $f'(x) = chx - shx$
7. $y = 2x + 1$
8. $a = \sqrt{3}$
9. $f'(x) = 2x \ln x + x$
10. $f'(x) = \arccos x - \frac{x}{\sqrt{1-x^2}}$
11. $f'(x) = e^x \cdot (\cos x - \sin x)$
12. $f'(x) = arshx + \frac{x}{\sqrt{x^2+1}}$
13. $f'(x) = \sin x + x \cos x + \frac{1}{\cos^2 x}$
14. $f'(x) = shx + (x + 1) \cdot chx$
15. $f'(x) = e^x \cdot \cos x + x \cdot e^x \cdot \cos x - x \cdot e^x \cdot \sin x$
16. $f'(0) = -2$
17. $f'(x) = \frac{\ln x - 1}{\ln^2 x}$
18. $f'(x) = \frac{\frac{1}{\ln 10} - \log_{10} x}{x^2}$
19. $f'(x) = \frac{\frac{x}{x^2+1} - arctgx}{x^2}$
20. $f'(1) = \frac{1}{4}$
21. $f'(x) = -10 \sin(10x)$
22. $f'(x) = \frac{\pi}{\cos^2(\pi x)}$
23. $f'(x) = -e^{-x}$
24. $f'(x) = \frac{3}{\sqrt{9x^2-1}}$
25. $y = 6x$.
26. $a = \frac{1}{\sqrt{3}}$
27. $f'(x) = \cos(\sqrt{x}) \cdot \frac{1}{2\sqrt{x}}$
28. $f'(x) = 100(x^2 + 1)^{99} \cdot 2x$
29. $f'(x) = \frac{2}{1-4x^2}$
30. $f'(x) = \frac{-1}{x^2+1}$

31. $f'(x) = 3 \sin^2 x \cos x$
32. $f'(e^2) = \frac{4}{e^2}$
33. $f'(x) = 2^{\frac{1}{x}} \ln 2 \cdot \frac{1}{x^2}$
34. $f'(x) = 3x^2 \cdot e^{-2x} - 2x^3 \cdot e^{-2x}$
35. $f'(x) = \cos(2\pi x) - 2\pi x \cdot \sin(2\pi x)$
36. $f'(x) = \operatorname{ctg}(4x) - \frac{4x}{\sin^2(4x)}$
37. $f'(x) = -e^{-x} \cdot \sin(\pi x) + \pi e^{-x} \cdot \cos(\pi x)$
38. $f'(x) = e^{\frac{1}{x}} - \frac{e^{\frac{1}{x}}}{x}$
39. $f'(x) = 2x \cdot \operatorname{arcsin}\left(\frac{1}{x}\right) + \frac{-\operatorname{sgn}(x)x}{\sqrt{x^2-1}}$
40. $f'(x) = e^{-x} \cdot \sin(\pi x) - x \cdot e^{-x} \cdot \sin(\pi x) + \pi x \cdot e^{-x} \cdot \cos(\pi x)$
41. $f'(x) = \frac{2x}{\sqrt{(x^4+1)^3}}$
42. $f'(x) = \frac{-x}{2\sqrt{(x^2+x+1)^3}}, f'(0) = 0.$
43. $f'(x) = \frac{\ln x - 2}{\ln^3 x}$
44. $f'(x) = \frac{\frac{2x}{\cos^2(2x)} - \operatorname{tg}(2x)}{x^2}$
45. $f'(x) = \frac{2x^2 \cdot \operatorname{sh}(2x) - 2x \cdot \operatorname{ch}(2x)}{x^4}$
46. $f'(x) = \frac{\frac{2x}{\operatorname{ch}^2(2x)} - \operatorname{th}(2x)}{x^2}$
47. $f'(x) = 15 \sin^2(5x) \cdot \cos(5x)$
48. $f'(x) = 40 \operatorname{sh}^3(10x) \cdot \operatorname{ch}(10x)$
49. $f'(x) = -e^{-\sqrt{x^2+1}} \cdot \frac{x}{\sqrt{x^2+1}}$
50. $f'(x) = \frac{-2e^{-2x}}{\sqrt{e^{-4x}+1}}$
51. $f'(1) = -\frac{\pi}{4}$
52. $f'(x) = 10e^{-\cos^2(5x)} \sin(10x)$
53. $f'(x) = \frac{1}{x(2x+1)}, f'(1) = \frac{1}{3}.$
54. $f'(x) = \frac{2x}{x^4+2x^2+2}, f'(0) = 0.$
55. $f'(x) = -e^{-x} \cdot \cos^4(\pi x) - 4\pi e^{-x} \cdot \cos^3(\pi x) \cdot \sin(\pi x)$
56. $f'(x) = \ln^2\left(\frac{x}{2x+1}\right) + 2 \ln\left(\frac{x}{2x+1}\right) \cdot \frac{1}{2x+1}.$
57. $f(x) = x^x + \left(\frac{x}{x+1}\right)^x = e^{x \ln x} + e^{x \ln\left(\frac{x}{x+1}\right)}$
 $f'(1) = \frac{5}{4} - \frac{\ln 2}{2}$