

Integrali - zadaci za domaći

- 1.1. $\int \left(\sqrt[3]{x} + \frac{1}{\sqrt[5]{x^4}} - {}^{2016}\sqrt{x^{2015}} \right) dx$; 1.2. $\int \left(\pi \cos x - 2x^3 + \frac{4}{x} - \frac{23}{\sin^2 x} + 7^{x+1} \right) dx$; 1.3. $\int \frac{3 \sin^2 x + 5}{\cos^2 x} dx$; 1.4. $\int \frac{2^{3x}}{3^{2x}} dx$; 1.5. $\int \operatorname{ctg}^2 x dx$;
- 1.6. $\int \frac{dx}{\sin^2 x \cdot \cos^2 x}$; 1.7. $\int \left(4 \sin x + 2\sqrt{x} - \frac{4}{x^2} + 7e^x + \frac{3}{\cos^2 x} - \frac{e}{\sqrt{1-x^2}} \right) dx$; 1.8. $\int \frac{2\sqrt{x-x}}{x^2} dx$; 1.9. $\int \frac{2^{x-1} + 3^{x+1}}{6^{x-2}} dx$; 1.10. $\int 5^{x-1} 2^{2x+1} dx$;
- 2.1. $\int \frac{3x+1}{3x-4} dx$; 2.2. $\int e^{-4x+7} dx$; 2.3. $\int (4-x)^{101} dx$; 2.4. $\int \frac{dx}{(x+5)^3}$; 2.5. $\int \frac{\ln^7 x}{x} dx$; 2.6. $\int \frac{x^4 dx}{4x^5-20}$; 2.7. $\int \frac{e^x dx}{\sqrt{e^{2x}-4}}$; 2.8. $\int \frac{\sqrt[4]{\operatorname{arctg} x}}{1+x^2} dx$;
- 2.9. $\int \operatorname{ctg} x dx$; 2.10. $\int \cos^2 x dx$; 2.11. $\int \frac{\cos(\ln(\ln(\ln x)))}{x \ln x \ln(\ln x)} dx$; 2.12. $\int x \sqrt{x-1} dx$; 2.13. $\int (2x-3)(x+1)^{11} dx$; 2.14. $\int \frac{\ln x + 2}{x(\ln x - 1)} dx$;
- 2.15. $\int \cos^3 x dx$; 2.16. $\int \sin^4 x dx$; 2.17. $\int \cos^2 x \sin^2 x dx$; 2.18. $\int \cos^{-6} x \sin x dx$; 2.19. $\int x^3 \sqrt{x^2-3} dx$ ($t = x^2 - 3$); 2.20. $\int \sqrt{\frac{1-x}{1+x}} dx$;
- 2.21. $\int \frac{\sin x + \cos x}{\sqrt[3]{\sin x - \cos x}} dx$; 2.22. $\int \sin^7 x \cos x dx$; 2.23. $\int \frac{dx}{\sqrt{8-x^2}}$; 2.24. $\int \frac{dx}{\sqrt{4x^2-24}}$; 2.25. $\int \frac{x^2 dx}{x^6+4}$ ($t = x^3$); 2.26. $\int \frac{x dx}{x^4+25}$ ($t = x^2$);
- 2.27. $\int \frac{dx}{x \sqrt[5]{\ln^7 x}}$; 2.28. $\int 5^{-x^3} \cdot x^2 dx$; 2.29. $\int \frac{dx}{x^2-6x+9}$; 2.30. $\int \sqrt{x} \sqrt{2\sqrt{x}+5} dx$; 2.31. $\int 3^x \operatorname{tg} 3^x dx$; 2.32. $\int \frac{dx}{4x^2-9}$; 2.33. $\int \frac{dx}{\sqrt{5x^2+7}}$;
- 2.34. $\int \frac{\sqrt{4-x^2} + \sqrt{4+x^2}}{\sqrt{16-x^4}} dx$;
- 3.1. $\int x^2 e^{4x} dx$; 3.2. $\int (2x-5) \cos 3x dx$; 3.3. $\int \operatorname{arctg} x dx$; 3.4. $\int \arcsin x dx$; 3.5. $\int x \operatorname{arctg} x dx$; 3.6. $\int x \sin \frac{3x}{2} dx$; 3.7. $\int (x^2-4x) e^{-3x} dx$;
- 3.8. $\int \arcsin \sqrt{x} dx$; 3.9. $\int \frac{\ln \sqrt{x}}{\sqrt{x}} dx$; 3.10. $\int \frac{x}{\cos^2 x} dx$; 3.11. $\int x \operatorname{tg}^2 x dx$; 3.12. $\int \frac{x^2-2x+2}{e^x} dx$; 3.13. $\int e^{-6x} \sin 5x dx$; 3.14. $\int \cos(\ln 3x) dx$;
- 3.15. $\int \sqrt{a^2-x^2} dx$; 3.16. $\int x \ln \left(\frac{1+x}{1-x} \right)$; 3.17. $\int e^{\sqrt{x}} dx$; 3.18. $\int x e^{x^2+3} \sin(x^2+4) dx$; 3.19. $\int \frac{e^{\sqrt{x+1}} \cos(\sqrt{x+1})}{\sqrt{x}} dx$; 3.20. $\int \frac{dx}{(x^2+4)^2}$;
- 3.21. $\int \sqrt{x} \cos \sqrt{x} dx$; 3.22. $\int \ln(x^2+2x+4) dx$; 3.23. $\int 4^x e^{2x} dx$; 3.24. $\int x^2 (x^3+3) e^{x^3+1} dx$; 3.25. $\int \frac{e^{\operatorname{tg} x} \sin x}{\cos^3 x} dx$; 3.26. $\int \frac{x^2}{(x^2+3)^2} dx$;
- 3.27. $\int 2^x \cos 3x dx$; 3.28. $\int \frac{x e^{\operatorname{arctg} x}}{(1+x^2)^{\frac{3}{2}}} dx$ ($t = \operatorname{arctg} x$); 3.29. $\int e^{-x} \arcsin e^x dx$ ($t = e^x$);
- 4.1. $\int \frac{dx}{x^2+4x+4}$; 4.2. $\int \frac{dx}{x^2+6x-16}$; 4.3. $\int \frac{dx}{x^2-6x+13}$; 4.4. $\int \frac{dx}{\sqrt{2+3x-2x^2}}$; 4.5. $\int \frac{dx}{\sqrt{6x-x^2}}$; 4.6. $\int \frac{2x+5}{x^2+2x+10}$; 4.7. $\int \frac{3x+7}{x^2+x-2}$; 4.8. $\int \frac{x+2}{\sqrt{x^2+4x+10}} dx$;
- 4.9. $\int \frac{x-3}{x^3-x} dx$; 4.10. $\int \frac{x dx}{x^3-3x+2}$; 4.11. $\int \frac{6x^2-7x+9}{(x-1)(x^2-2x+5)} dx$; 4.12. $\int \frac{x+2}{x^3-2x^2} dx$; 4.13. $\int \frac{x^3+x^2-16x+16}{x^2-4x+3} dx$; 4.14. $\int \frac{7x^2-10x+20}{x^3-2x^2+5x} dx$;
- 4.15. $\int \frac{dx}{x \sqrt{13x^2+6x+2}}$;
- 5.1. $\int \frac{e^x dx}{e^{4x} + e^{3x} - e^x - 1}$; 5.2. $\int \frac{(1-\ln x) dx}{x(\ln x+1)(\ln^2 x+1)}$; 5.3. $\int \frac{\ln x dx}{x \sqrt{1-\ln^2 x-4 \ln x}}$; 5.4. $\int \frac{18 \ln x}{x(\ln x-2)(\ln^2 x+2 \ln x+10)} dx$; 5.5. $\int \frac{3e^{3x}-4e^{2x}+9e^x}{(e^x+1)(e^{2x}-2e^x+5)} dx$;
- 5.6. $\int \frac{e^{2x}+6e^x}{e^{3x}+2e^{2x}+2e^x} dx$; 5.7. $\int \frac{dx}{1+e^{\frac{x}{2}}+e^{\frac{x}{3}}+e^{\frac{x}{6}}}$ ($t^6 = e^x$); 5.8. $\int \frac{dx}{\sqrt{e^{2x}-2e^x+3}}$; 5.9. $\int \frac{dx}{\sqrt{1+e^{2x}}}$; 5.10. $\int \sqrt{\frac{e^x-1}{e^x+1}} dx$;
- 6.1. $\int \sqrt{x^2+x+1} dx$; 6.2. $\int \sqrt{5+4x-x^2} dx$; 6.3. $\int \frac{2x^2+3x}{\sqrt{x^2+2x+2}} dx$; 6.4. $\int \sqrt{x^2-4x+20} dx$; 6.5. $\int \sqrt{a^2 \pm x^2} dx$; 6.6. $\int \frac{1}{x^2 \sqrt{x^2+1}} dx$;
- 6.7. $\int \frac{1}{x^2 \sqrt{x^2-1}} dx$; 6.8. $\int \frac{1}{x \sqrt{x^2+1}} dx$; 6.7. $\int \frac{dx}{\sqrt{(36-x^2)^3}}$;
- 7.1. $\int \sqrt{\frac{x-1}{x-3}} dx$; 7.2. $\int \frac{dx}{1+\sqrt{x}}$; 7.3. $\int \frac{x \sqrt[3]{x+2}}{x+\sqrt[3]{x+2}} dx$; 7.4. $\int \frac{\sqrt{x-1}}{\sqrt[3]{x-1+1}} dx$ ($t^6 = x-1$); 7.5. $\int \frac{\sqrt{x}}{x(1+\sqrt[3]{x})} dx$;
- 8.1. $\frac{dx}{\sin x}$; 8.2. $\int \frac{dx}{\sin^2 x + 2 \cos^2 x}$; 8.3. $\int \frac{\sin x \cos x}{1+\sin^4 x} dx$; 8.4. $\frac{dx}{(2+\cos x) \sin x}$; 8.5. $\int \cos^4 x \sin^3 x dx$; 8.6. $\int \frac{3 \sin^2 x + \sin x + 1}{(\sin x - 1)(\sin^2 x + 4)} \cos x dx$; 8.7. $\int \frac{dx}{\sin x + \cos x + 3}$;
- 8.8. $\int \frac{\cos x dx}{\sin x + \cos x}$; 8.9. $\int \frac{1+\operatorname{tg} x}{\sin 2x} dx$; 8.10. $\int \frac{dx}{\sin^6 x + \cos^6 x}$; 8.11. $\int \frac{\sin^2 x - \cos^2 x}{\sin^4 x + \cos^4 x} dx$; 8.12. $\int \frac{dx}{2 \sin x - \cos x + 5}$; 8.13. $\int \frac{\sin x \cos x}{\sqrt{2-\sin^4 x}} dx$;
- 8.14. $\int \frac{(2 \sin x + 3) \cos x dx}{\sin^2 x + 2 \sin x + 2}$;
- 9.1. $\int_0^1 \frac{x \ln(x + \sqrt{1+x^2})}{(1+x^2)^2} dx$ ($= -\frac{1}{4} \ln(1 + \sqrt{2}) + \frac{\sqrt{2}}{4}$); 9.2. $\int_4^5 x \sqrt{x^2-4x} dx$ ($= \frac{14\sqrt{5}}{3} - 4 \ln \left(\frac{3+\sqrt{5}}{2} \right)$); 9.3. $\int_0^{\sqrt{2}} x^3 \sqrt{16-x^8} dx$ ($= \pi$);
- 9.4. $\int_1^{e^2} x (\ln^2 x - 3 \ln x + 3) dx$ ($= \frac{1}{4} (5e^4 - 7)$);
- 10.1. $\int_2^{+\infty} \frac{\ln x}{x} dx$; 10.2. $\int_1^{+\infty} \frac{dx}{\sqrt{x}}$; 10.3. $\int_1^{+\infty} \frac{dx}{x^4}$; 10.4. $\int_0^{+\infty} e^{-2x} dx$; 10.5. $\int_{-\infty}^{+\infty} \frac{dx}{1+x^2}$;