

Rješenja 12. domaće zadaće

1. $\frac{1}{2} \ln |x^2 + x + 1| - \frac{\sqrt{3}}{3} \operatorname{arctg}\left(\frac{\sqrt{3}(2x+1)}{3}\right) + C.$
2. $\frac{x^2}{2} - 2x + \frac{8}{\sqrt{3}} \operatorname{arctg}\left(\frac{x+1}{\sqrt{3}}\right) + C.$
3. $\frac{1}{x} + \frac{1}{3} \ln |x - 1| - \frac{1}{6} \ln |x^2 + x + 1| + \frac{1}{\sqrt{3}} \operatorname{arctg}\left(\frac{2x+1}{\sqrt{3}}\right) + C.$
4. $\frac{1}{12} \ln |x + 2| - \frac{1}{24} \ln |x^2 - 2x + 4| + \frac{1}{4\sqrt{3}} \operatorname{arctg}\left(\frac{x-1}{\sqrt{3}}\right) + C.$
5. $-\frac{1}{2\sqrt{3}} \operatorname{arctg}\frac{x}{\sqrt{3}} + \frac{1}{2} \operatorname{arctg}x + C.$
6. $\frac{\pi}{8} + \frac{1}{4}.$
7. $\ln 2 - \frac{\ln 3}{2} + \frac{5}{3\sqrt{3}} \cdot \frac{\pi}{6} - \frac{1}{3}.$
8. $6 \left(-\frac{409}{420} + \frac{1}{2} \ln 2 + \frac{\pi}{4}\right).$
9. $\sqrt{8} - \sqrt{3} + (\ln(2 + \sqrt{8}) - \ln(2 + \sqrt{3})).$
10. $\frac{\sqrt{x^2+1}(2x^2-1)}{3x^3} + C.$
11. 0, jer se integrira od -1 do 1 , a podintegralna funkcija je neparna.
12. $\frac{\pi}{4} - \operatorname{arctg}(\operatorname{tg}(-\frac{\pi}{8}) + 1)$
13. $\frac{3\sqrt{2}-2\sqrt{3}}{3} + \frac{1}{2} \ln\left(\frac{(2+\sqrt{3})(\sqrt{2}-2)}{(2+\sqrt{2})(\sqrt{3}-2)}\right)$
14. $\ln\left(\frac{1+\sqrt{3}}{\sqrt{2}}\right) + \frac{\sqrt{3}}{2}.$
15. $-\frac{5}{24} + \frac{35\pi}{512}.$
16. $\frac{4}{3}.$
17. $\frac{3\operatorname{th}x - (\operatorname{th}x)^3}{3} + C.$
18. $\frac{1}{6}(\operatorname{ch}x)^5 \cdot \operatorname{sh}x - \frac{1}{24}(\operatorname{ch}x)^3 \cdot \operatorname{sh}x - \frac{1}{16}\operatorname{ch}x \cdot \operatorname{sh}x - \frac{1}{16}x + C.$
19. $\frac{1}{8}(14\sqrt{3} - \ln(2 + \sqrt{3})).$
20. $\frac{5\pi}{128}.$