

Таблица интегралов

1. $\int 0 dx = C.$

2. $\int x^n dx = \frac{x^{n+1}}{n+1} + C \quad (n \neq -1); \quad \int dx = x + C; \quad \int \frac{dx}{x^2} = -\frac{1}{x} + C;$

$\int \sqrt{x} dx = \frac{2}{3} x \sqrt{x} + C; \quad \int \frac{dx}{\sqrt{x}} = 2\sqrt{x} + C.$

3. $\int \frac{dx}{x} = \ln|x| + C.$ 4. $\int a^x dx = \frac{a^x}{\ln a} + C; \quad \int e^x dx = e^x + C.$

5. $\int \sin x dx = -\cos x + C.$ 6. $\int \cos x dx = \sin x + C.$

7. $\int \frac{dx}{\cos^2 x} = \operatorname{tg} x + C.$ 8. $\int \frac{dx}{\sin^2 x} = -\operatorname{ctg} x + C.$

9. $\int \frac{dx}{\sqrt{1-x^2}} = \arcsin x + C = -\arccos x + C.$

10. $\int \frac{dx}{1+x^2} = \operatorname{arctg} x + C = -\operatorname{arcctg} x + C.$

11. $\int \frac{dx}{\sqrt{a^2-x^2}} = \arcsin \frac{x}{a} + C.$ 12. $\int \frac{dx}{x^2+a^2} = \frac{1}{a} \operatorname{arctg} \frac{x}{a} + C.$

13. $\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \ln|x + \sqrt{x^2 \pm a^2}| + C.$

14. $\int \frac{dx}{x^2-a^2} = \frac{1}{2a} \ln \left| \frac{x-a}{x+a} \right| + C; \quad \int \frac{dx}{a^2-x^2} = \frac{1}{2a} \ln \left| \frac{x+a}{x-a} \right| + C.$

15. $\int \frac{x dx}{a^2 \pm x^2} = \pm \frac{1}{2} \ln|a^2 \pm x^2| + C.$ 16. $\int \frac{x dx}{\sqrt{a^2 \pm x^2}} = \pm \sqrt{a^2 \pm x^2} + C.$

17. $\int \operatorname{tg} x dx = -\ln|\cos x| + C.$ 18. $\int \operatorname{ctg} x dx = \ln|\sin x| + C.$

19. $\int \frac{dx}{\sin x} = \ln \left| \operatorname{tg} \frac{x}{2} \right| + C.$ 20. $\int \frac{dx}{\cos x} = \ln \left| \operatorname{tg} \left(\frac{x}{2} + \frac{\pi}{4} \right) \right| + C.$

21. $\int \sqrt{a^2-x^2} dx = \frac{x}{2} \sqrt{a^2-x^2} + \frac{a^2}{2} \arcsin \frac{x}{a} + C \quad (a > 0).$

22. $\int \sqrt{x^2 \pm a^2} dx = \frac{x}{2} \sqrt{x^2 \pm a^2} \pm \frac{a^2}{2} \ln|x + \sqrt{x^2 \pm a^2}| + C.$