

НЕОПРЕДЕЛЕННЫЕ ИНТЕГРАЛЫ ОТ ФУНКЦИЙ Вещественного переменного

1. $\int x^n dx = \frac{x^{n+1}}{n+1} + C;$
2. $\int \frac{1}{x} dx = \ln|x| + C;$
3. $\int \frac{dx}{ax+b} = \frac{1}{a} \ln|ax+b| + C;$
4. $\int \frac{xdx}{ax+b} = \frac{x}{a} - \frac{b}{a^2} \ln|ax+b| + C;$
5. $\int \frac{dx}{a^2+x^2} = \frac{1}{a} \operatorname{arctg} \frac{x}{a} + C;$
6. $\int \frac{dx}{a^2-x^2} = \frac{1}{2a} \ln \left| \frac{a+x}{a-x} \right| + C;$
7. $\int \frac{dx}{(a^2+x^2)^2} = \frac{x}{2a^2(a^2+x^2)} + \frac{1}{2a^3} \operatorname{arctg} \frac{x}{a} + C$
8. $\int \frac{dx}{(a^2-x^2)^2} = \frac{x}{2a^2(a^2-x^2)} + \frac{1}{4a^3} \ln \left| \frac{a+x}{a-x} \right| + C;$
9. $\int e^{ax} dx = \frac{1}{a} e^{ax} + C;$
10. $\int xe^{ax} dx = \frac{e^{ax}}{a^2} (ax-1) + C;$
11. $\int x^2 e^{ax} dx = e^{ax} \left(\frac{x^2}{a} - \frac{2x}{a^2} + \frac{2}{a^3} \right) + C;$
12. $\int e^{ax} \cos bxdx = \frac{e^{ax}}{a^2+b^2} (a \cos bx + b \sin bx) + C;$
13. $\int e^{ax} \sin bxdx = \frac{e^{ax}}{a^2+b^2} (a \sin bx + b \cos bx) + C;$
14. $\int \ln(ax) dx = x \ln(ax) - x + C;$
15. $\int x \ln x dx = \frac{x^2}{2} \ln x - \frac{x^2}{4} + C;$
16. $\int x^2 \ln x dx = \frac{x^3}{3} \ln x - \frac{x^3}{9} + C;$
17. $\int \frac{\ln(ax)}{x} dx = \frac{1}{2} [\ln(ax)]^2 + C;$
18. $\int \frac{\ln x}{x^2} dx = \frac{\ln x}{x} - \frac{1}{x} + C;$
19. $\int \frac{dx}{x \ln x} = \ln|\ln x| + C;$
20. $\int (\ln x)^2 dx = x(\ln x)^2 - 2x \ln x + 2x + C;$
21. $\int \sin ax dx = -\frac{1}{a} \cos ax + C;$
22. $\int \cos ax dx = \frac{1}{a} \sin ax + C;$
23. $\int \sin^2 ax dx = \frac{1}{2} x - \frac{1}{4a} \sin 2ax + C;$

$$24. \int \cos^2 ax \, dx = \frac{1}{2}x + \frac{1}{4a} \sin 2ax + C;$$

$$25. \int x \sin ax \, dx = \frac{\sin ax}{a^2} - \frac{x \cos ax}{a} + C;$$

$$26. \int x \cos ax \, dx = \frac{\cos ax}{a^2} + \frac{x \sin ax}{a} + C;$$

$$27. \int \operatorname{arctg} \frac{x}{a} dx = x \operatorname{arctg} \frac{x}{a} - \frac{a}{2} \ln(a^2 + x^2) + C;$$

$$28. \int x \operatorname{arctg} \frac{x}{a} dx = \frac{1}{2}(a^2 + x^2) \operatorname{arctg} \frac{x}{a} - \frac{ax}{2} + C.$$