

Table of Integrals

MATH 1100-2 - SPRING 2002

In the following a , b and C are constants, and u , v are functions.

1. $\int x^a dx = \frac{x^{a+1}}{a+1} + C$ for all $a \neq -1$.
2. $\int \frac{1}{x} dx = \ln(|x|) + C$.
3. $\int a^x dx = \frac{1}{\ln(a)} a^x + C$.
4. $\int e^x dx = e^x + C$.
5. $\int \frac{dx}{a^2-x^2} = \frac{1}{2a} \ln\left(\left|\frac{a+x}{a-x}\right|\right) + C$.
6. $\int \sqrt{a^2+x^2} dx = \frac{1}{2}(x\sqrt{a^2+x^2} + a^2 \ln(|x + \sqrt{a^2+x^2}|)) + C$.
7. $\int \sqrt{x^2-a^2} dx = \frac{1}{2}(x\sqrt{x^2-a^2} - a^2 \ln(|x + \sqrt{a^2-x^2}|)) + C$.
8. $\int \frac{dx}{\sqrt{a^2+x^2}} = \ln(|x + \sqrt{a^2+x^2}|) + C$.
9. $\int \frac{dx}{x\sqrt{a^2-x^2}} = -\frac{1}{a} \ln\left(\left|\frac{a+\sqrt{a^2-x^2}}{x}\right|\right) + C$.
10. $\int \frac{dx}{\sqrt{x^2-a^2}} = \ln(|x + \sqrt{x^2-a^2}|) + C$.
11. $\int \frac{dx}{x\sqrt{a^2+x^2}} = -\frac{1}{a} \ln\left(\left|\frac{a+\sqrt{a^2+x^2}}{x}\right|\right) + C$.
12. $\int \frac{x dx}{ax+b} = \frac{x}{a} - \frac{b}{a^2} \ln(|ax+b|) + C$.
13. $\int \frac{dx}{x(ax+b)} = \frac{1}{b} \ln\left(\left|\frac{x}{ax+b}\right|\right) + C$.
14. $\int \ln(x) dx = x(\ln(x) - 1) + C$.
15. $\int \frac{x dx}{(ax+b)^2} = \frac{1}{a^2}(\ln(|ax+b|) + \frac{b}{ax+b}) + C$.
16. $\int x\sqrt{ax+bd} dx = \frac{2}{15a^2}(3ax-2b)(ax+b)^{\frac{3}{2}} + C$.
17. $\int u dv = uv - \int v du$.