

11. INTEGRATION

1. $\int x^n dx = \frac{x^{n+1}}{n+1} + C$
2. $\int (3x - 5)(x + 1) dx = \int 3x^2 - 2x - 5 dx = x^3 - x^2 - 5x + C$
3. $\int \frac{1}{x} dx = \ln x + C$
4. $\int x^{-3/2} dx = -2x^{-1/2} + C$
5. $\int (x+1)^{-1/2} dx = 2(x+1)^{1/2} + C$
6. $\int \frac{x+1}{\sqrt{x}} dx = \int \sqrt{x} + \frac{1}{\sqrt{x}} dx = \frac{2}{3}x\sqrt{x} + 2\sqrt{x} + C$
7. $\int (ax+b)^n dx = \frac{(ax+b)^{n+1}}{a(n+1)} + C$
8. $\int 2 dx = 2x + C$
9. $\int \frac{3x-5}{2} dx = \frac{3x^2}{4} - \frac{5x}{2} + C$
10. $\int \frac{2}{3x-5} dx = \frac{2}{3} \ln(3x-5) + C$
11. $\int \frac{3x^2+2x}{x} dx = \int 3x + 2 dx = \frac{3x^2}{2} + 2x + C$
12. $\int \frac{x}{x^2+1} dx = \frac{1}{2} \ln(x^2+1) + C$
13. $\int \frac{5x^2-3x+1}{\sqrt{x}} dx = 2x^{5/2} - 2x^{3/2} + 2x^{1/2} + C$
14. $\int (3x-1)^5 dx = \frac{1}{18} (3x-1)^6 + C$
15. $\int e^x dx = e^x + C$
16. $\int \frac{x}{e} + \frac{e}{x} dx = \frac{x^2}{2e} + e \ln x + C$
17. $\int \sqrt{e^x} dx = 2e^{x/2} + C$
18. $\int e^{ax+b} dx = \frac{1}{a} e^{ax+b} + C$
19. $\int \frac{e^x}{e^x+1} dx = \ln(e^x+1) + C$
20. $\int \frac{e^x+1}{e^x} dx = x - e^{-x} + C$
21. $\int \frac{e^{2x}+e^x}{e^{4x}} dx = -\frac{1}{2} e^{-2x} - \frac{1}{3} e^{-3x} + C$
22. $\int \frac{f'(x)}{f(x)} dx = \ln f(x) + C$
23. $\int \frac{1}{ax+b} dx = \frac{1}{a} \ln(ax+b) + C$