# Integral Formulas.

| Type | Integrals | Answer | Example |
|---|---|---|---|
| **Constant** | $\int a\,dx$ | $a\,x+c$ | $\int 5\,dx = 5x+c$<br><br>$\int -11\,dx = -11x+c$ |
| **Line** | $\int a\,x\,dx$ | $a\frac{1}{2}x^2+c$ | $\int 5x\,dx = \frac{5}{2}x^2+c$<br><br>$\int 16x\,dx = \frac{16}{2}x^2+c = 8x^2+c$ |
| **Power** | $\int a\,x^n\ \ dx =$ | $a\frac{1}{n+1}x^{n+1}+c$ | $\int 5x^3\,dx = \frac{5}{3+1}x^{3+1}+c = \frac{5}{4}x^4+c$<br><br>$\int \frac{8}{x^3}\,dx = \int 8\frac{1}{x^3}\,dx = \int 8\frac{1}{x^3}\,dx = \int 8x^{-3}\,dx$<br>$= \frac{8}{-3+1}x^{-3+1}+c = \frac{8}{-2}x^{-2}+c = -\frac{4}{x^2}+c$<br><br>$\int 8\sqrt{x^3}\,dx = \int 8x^{\frac{3}{2}}\,dx = 8\left(\frac{1}{3/2+1}\right)x^{3/2+1}$<br>$= 8(\frac{1}{5/2})x^{5/2}+c = \frac{16}{5}\sqrt{x^5}+c$ |
| **Combined Rules** | Combining some of the above rules. | | $\int (\frac{8}{x^3}+5x^3+16x+5)\,dx =$<br>$-\frac{4}{x^2}+\frac{5}{4}x^4+8x^2+5x+c$ |
| **Exponential** | $\int a\,e^{bx}dx$ | $\frac{a}{b}e^{bx}+c$ | $\int 4e^{5x}dx = \frac{4}{5}e^{5x}+c$<br><br>$\int \frac{4}{e^{5x}}dx = \int 4e^{-5x} = \frac{4}{-5}e^{-5x}+c$ |
| **Natural Log** | $\int a\frac{1}{x}\,dx$ | $a\ln\lvert x\rvert+c$ | $\int \frac{6}{x}\,dx = 6\ln\lvert x\rvert+C$ |