Useful Integrals (Take $a \neq 0$ and b to be real, and m and n to be integers.)

Integrals Involving Trigonometric Functions

$$\int \cos(ax+b)\,dx = \frac{1}{a}\sin(ax+b) + C \qquad \int \sin(ax+b)\,dx = -\frac{1}{a}\cos(ax+b) + C$$

$$\int \cos^2(ax+b)\,dx = \frac{x}{2} + \frac{1}{4a}\sin\big(2(ax+b)\big) + C$$

$$\int \sin^2(ax+b)\,dx = \frac{x}{2} - \frac{1}{4a}\sin\big(2(ax+b)\big) + C$$

$$\int x\cos ax\,dx = \frac{1}{a^2}\cos ax + \frac{x}{a}\sin ax + C \qquad \int x\sin ax\,dx = \frac{1}{a^2}\sin ax - \frac{x}{a}\cos ax + C$$

$$\int x^2\cos ax\,dx = \frac{2x\cos ax}{a^2} + \frac{a^2x^2-2}{a^3}\sin ax + C$$

$$\int x^2\sin ax\,dx = \frac{2x}{a^2}\sin ax - \frac{a^2x^2-2}{a^3}\cos ax + C$$

$$\int x^m\cos ax\,dx = \frac{x^m\sin ax}{a} - \frac{m}{a}\int x^{m-1}\sin ax\,dx$$

$$\int x^m\sin ax\,dx = -\frac{x^m\cos ax}{a} + \frac{m}{a}\int x^{m-1}\cos ax\,dx$$

$$\int \cos ax\cos bx\,dx = \frac{\sin[(a-b)x]}{2(a-b)} + \frac{\sin[(a+b)x]}{2(a+b)} + C \quad (a^2 \neq b^2)$$

$$\int \sin ax\sin bx\,dx = \frac{\sin[(a-b)x]}{2(a-b)} - \frac{\sin[(a+b)x]}{2(a+b)} + C \quad (a^2 \neq b^2)$$

$$\int \cos ax\sin bx\,dx = \frac{\cos[(a-b)x]}{2(a-b)} - \frac{\cos[(a+b)x]}{2(a+b)} + C \quad (a^2 \neq b^2)$$

↑ 0 if $a=b$

Integrals Involving Exponential Functions

$$\int xe^{ax+b}\,dx = \frac{e^{ax+b}}{a^2}(ax-1) + C \qquad \int x^m e^{ax+b}\,dx = \frac{x^m e^{ax+b}}{a} - \frac{m}{a}\int x^{m-1}e^{ax+b}\,dx$$

$$\int e^{ax}\cos bx\,dx = \frac{e^{ax}}{a^2+b^2}\Big(a\cos bx + b\sin bx\Big) + C \qquad (a^2+b^2 \neq 0)$$

$$\int e^{ax}\sin bx\,dx = \frac{e^{ax}}{a^2+b^2}\Big(a\sin bx - b\cos bx\Big) + C \qquad (a^2+b^2 \neq 0)$$