

$$\int \sin^n(x) dx = -\frac{1}{n} \sin^{n-1}(x) \cos(x) + \frac{n-1}{n} \int \sin^{n-2}(x) dx$$

$$\int \cos^n(x) dx = \frac{1}{n} \cos^{n-1}(x) \sin(x) + \frac{n-1}{n} \int \cos^{n-2}(x) dx$$

$$\int \tan^n(x) dx = \frac{1}{n-1} \tan^{n-1}(x) - \int \tan^{n-2}(x) dx$$

$$\int \csc^n(x) dx = -\frac{1}{n-1} \csc^{n-2}(x) \cot(x) + \frac{n-2}{n-1} \int \csc^{n-2}(x) dx$$

$$\int \sec^n(x) dx = \frac{1}{n-1} \tan(x) \sec^{n-2}(x) + \frac{n-2}{n-1} \int \sec^{n-2}(x) dx$$

$$\int \cot^n(x) dx = \frac{-1}{n-1} \cot^{n-1}(x) - \int \cot^{n-2}(x) dx$$

## Product to Sum Formulas

$$\sin \alpha \sin \beta = \frac{1}{2} [\cos(\alpha - \beta) - \cos(\alpha + \beta)]$$

$$\cos \alpha \cos \beta = \frac{1}{2} [\cos(\alpha - \beta) + \cos(\alpha + \beta)]$$

$$\sin \alpha \cos \beta = \frac{1}{2} [\sin(\alpha + \beta) + \sin(\alpha - \beta)]$$

$$\cos \alpha \sin \beta = \frac{1}{2} [\sin(\alpha + \beta) - \sin(\alpha - \beta)]$$