Table of Provided Formulas

$\sin(x+y) = \sin(x)\cos(y) + \cos(x)\sin(y)$ $\qquad$ $\cos(x+y) = \cos(x)\cos(y) - \sin(x)\sin(y)$

- $\int \tan(u)\,du = \ln|\sec(u)| + C$
- $\int \cot(u)\,du = \ln|\sin(u)| + C$
- $\int \tan^n(u)\,du = \frac{1}{n-1}\tan^{n-1}(u) - \int \tan^{n-2}(u)\,du$
- $\int \sec(u)\,du = \ln|\sec(u)+\tan(u)| + C$
- $\int \csc(u)\,du = \ln|\csc(u)-\cot(u)| + C$
- $\int \sec^n(u)\,du = \frac{1}{n-1}\sec^{n-2}(u)\tan(u) + \frac{n-2}{n-1}\int \sec^{n-2}(u)\,du$

- $\int \sin(au)\sin(bu)\,du = \frac{\sin((a-b)u)}{2(a-b)} - \frac{\sin((a+b)u)}{2(a+b)}$
- $\int \sin(au)\cos(bu)\,du = -\frac{\cos((a-b)u)}{2(a-b)} - \frac{\cos((a+b)u)}{2(a+b)}$
- $\int \cos(au)\cos(bu)\,du = \frac{\sin((a-b)u)}{2(a-b)} + \frac{\sin((a+b)u)}{2(a+b)}$

Sum Formulas

$$\sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6} \qquad \sum_{i=1}^{n} i^3 = \left(\frac{n(n+1)}{2}\right)^2$$