MATHEMTAICAL TABLES

1. $\int \sin ax \cos ax\, dx = \frac{1}{2a} \sin^2 ax + c$
2. $\int \sin^2 ax \cos^2 ax\, dx = \frac{x}{8} - \frac{(\sin 4ax)}{32a} + c$
3. $\int \sin^n ax \cos ax\, dx = \frac{1}{(a(n+1))} \sin^{(n+1)} ax + c\ for: n \neq -1$
4. $\int \sin^n ax \cos^n ax\, dx = -(\frac{1}{(a(n+1))}) \cos^{(n+1)} ax + c\ for: n \neq -1$
5. $\int \sin^n ax \cos^m ax\, dx = \frac{-((\sin^{(n-1)} ax \cos^{(m+1)} ax))}{(a(n+m))} + \frac{(n-1)}{(n+m)} \int \sin^{(n-2)} ax \cos^m ax\, dx$ $for: m>0, n>0 = \frac{(\sin^{(n+1)} ax \cos^{(m-1)} ax)}{(a(n+m))} + \frac{(m-1)}{(n+m)} \int \sin^n ax \cos^{(m-2)} ax\, dx,\ for: m>0, n>0$
$\int \frac{dx}{(\sin ax \cos ax)} = \frac{1}{a} \ln \tan ax + c$
$\int \frac{dx}{(\sin^2 ax \cos ax)} = \frac{1}{a} [\ln \tan[\frac{\pi}{4} + \frac{ax}{2}] - \frac{1}{(\sin ax)}] + c$
$\int \frac{dx}{(\sin ax \cos^2 ax)} = \frac{1}{a} (\ln \tan(\frac{ax}{2}) + (\frac{1}{\cos} ax)) + c$
$\int \frac{dx}{(\sin^3 ax \cos ax)} = \frac{1}{a} (\ln \tan ax - (\frac{1}{(2\sin^2 ax)})) + c$
$\int \frac{dx}{(\sin ax \cos^3 ax)} = \frac{1}{a} (\ln \tan ax + \frac{1}{(2\cos^2 ax)}) + c$
$\int \frac{dx}{(\sin^2 ax \cos^2 ax)} = \frac{-2}{a} \cot 2ax + c$
$\int \frac{dx}{(\sin^2 ax \cos^3 ax)} = \frac{1}{a} \{\frac{(\sin ax)}{(2\cos^2 ax)} - \frac{1}{(\sin ax)} + \frac{3}{2} \ln \tan[\frac{\pi}{4} + \frac{ax}{2}]\} + c$
$\int \frac{dx}{(\sin^3 ax \cos^2 ax)} = \frac{1}{a} (\frac{1}{(\cos ax)} - \frac{(\cos ax)}{(2\sin^2 ax)} + \frac{3}{2} \ln \tan \frac{ax}{2}) + c$
$\int \frac{dx}{(\sin ax \cos^n ax)} = \frac{1}{(a(n-1)\cos^{(n-1)} ax)} + \int \frac{dx}{(\sin ax \cos^{(n-2)} ax)}\ for: n \neq 1$
$\int \frac{dx}{(\sin^n ax \cos ax)} = -(\frac{1}{(a(n-1)\sin^{(n-1)} ax)}) + \int \frac{dx}{(\sin^{(n-2)} ax \cos ax)}\ for: n \neq 1$
$\int \frac{dx}{(\sin^n ax \cos^m ax)} = -(\frac{1}{(a(n-1))} \cdot \frac{1}{(\sin^{(n-1)} ax \cos^{(m-1)} ax)}) + \frac{(n+m-2)}{(n-1)} \int \frac{dx}{(\sin^{(n-2)} ax \cos^m ax)}$ $\frac{1}{(a(m-1))} \cdot \frac{1}{(\sin^{(n-1)} ax \cos^{(m-1)} ax)} + \frac{(n+m-2)}{(m-1)} \int \frac{dx}{(\sin^n ax \cos^{(m-2)} ax)}\ for: n>0, m>1$
$\int \frac{(\sin ax\, dx)}{(\cos^2 ax)} = \frac{1}{a} sec\, ax + c$