

## MATHEMTAICAL TABLES

$\int \frac{(\cos ax)}{(1 + \cos ax)} = x - \frac{1}{a} \tan\left(\frac{ax}{2}\right) + c$
$\int \frac{(\cos ax)}{(1 - \cos ax)} dx = -x - \frac{1}{a} \cot \frac{ax}{2} + c$
$\int \frac{dx}{(\cos ax(1 + \cos ax))} = \frac{1}{a} \ln\left(\tan\left[\frac{\pi}{4} + \frac{ax}{2}\right]\right) - \frac{1}{a} \tan \frac{ax}{2} + c$
$\int \frac{dx}{(\cos ax(1 - \cos ax))} = \frac{1}{a} \ln\left(\tan\left[\frac{\pi}{4} + \frac{ax}{2}\right]\right) - \frac{1}{a} \cot\left(\frac{ax}{2}\right) + c$
$\int \frac{dx}{(1 + \cos ax)^2} = \frac{1}{2a} \tan \frac{ax}{2} - \frac{1}{6a} \tan^3 \frac{ax}{2} + c$
$\int \frac{dx}{(1 - \cos ax)^2} = \frac{-1}{2a} \cot \frac{ax}{2} - \frac{1}{6a} \cot^3 \frac{ax}{2} + c$
$\int \frac{(\cos ax)}{(1 + \cos ax)^2} dx = \frac{1}{2a} \tan \frac{ax}{2} - \frac{1}{6a} \tan^3 \frac{ax}{2} + c$
$\int \frac{dx}{(1 + \cos^2 ax)} = \frac{1}{(2\sqrt{2a})} \sin^{-1}\left[\frac{(1 - 3\cos^2 ax)}{(1 + \cos^2 ax)}\right] + c$
$\int \frac{dx}{(1 - \cos^2 ax)} = \frac{-1}{a} \cot ax + c$
$\int \cos ax \cos bx dx = \frac{(\sin(a-b)x)}{(2(a-b))} + \frac{(\sin(a+b)x)}{(2(a+b))} + k \text{ for } :  a  \neq  b $
$\int \frac{dx}{(b+c \cos ax)} = \frac{2}{(a\sqrt{(b^2-c^2)})} \tan^{-1}\left[\frac{((b-c) \tan(\frac{ax}{2}))}{(\sqrt{(b^2-c^2)})}\right] + k$ $\text{for } : b^2 > c^2 = \frac{1}{(a\sqrt{(c^2-b^2)})} \ln\left[\frac{((c-b) \tan(\frac{ax}{2}) + \sqrt{(c^2-b^2)})}{((c-b) \tan(\frac{ax}{2}) - \sqrt{(c^2-b^2)})}\right] + k$
$\int \frac{(\cos ax)}{(b+c \cos ax)} dx = \frac{x}{c} - \frac{b}{c} \int \frac{dx}{(b+c \cos ax)}$
$\int \frac{dx}{(\cos ax(b+c \cos ax))} = \frac{1}{ab} \ln\left(\tan\left[\frac{ax}{2} + \frac{\pi}{4}\right]\right) - \frac{a}{b} \int \frac{dx}{(b+c \cos ax)}$
$\int \frac{dx}{(b+c \cos ax)^2} = \frac{(c \sin ax)}{[a(c^2-b^2)(b+c \cos ax)]} - \frac{b}{(c^2-b^2)} \int \frac{dx}{(b+c \cos ax)}$
$\int \frac{(\cos ax)}{(b^2+c \cos ax)^2} = \frac{(b \sin ax)}{[a(b^2-c^2)(b+c \cos ax)]} - \frac{c}{(b^2-c^2)} \int \frac{dx}{(b+c \cos ax)}$
$\int \frac{dx}{(b^2+c^2 \cos^2 ax)} = \frac{1}{(ab\sqrt{(b^2+c^2)})} \tan^{-1}\left(\frac{b \tan ax}{\sqrt{(b^2+c^2)}}\right) + k$
$\int \frac{dx}{(b^2-c^2 \cos^2 ax)} = \frac{1}{(ab\sqrt{(b^2-c^2)})} + k$ $\text{for } b^2 > c^2 = \frac{1}{(2ab\sqrt{(c^2-b^2)})} \ln\left[\frac{(b \tan ax - \sqrt{(c^2-b^2)})}{(b \tan ax + \sqrt{(c^2-b^2)})}\right] + k$
$\int \cos ax \cos^n x dx = \frac{(\cos^n x \sin ax)}{a} + \frac{n}{2a} \int \cos^{(n-1)} x \cos(a-1) x dx - \frac{n}{2a} \int \cos^{(n-1)} x \cos(a+1) x dx$
$\int \frac{(\cos x)}{(\sqrt{(a^2+b^2 \cos^2 x)})} dx = \left(\frac{1}{b}\right) \sin^{-1}\left(\frac{(b \sin x)}{(\sqrt{(a^2+b^2)})}\right) + k$