

Trigonometrical Formulae

$$\sin(A + B) = \sin A \cos B + \cos A \sin B$$

$$\sin(A - B) = \sin A \cos B - \cos A \sin B$$

$$\cos(A + B) = \cos A \cos B - \sin A \sin B$$

$$\cos(A - B) = \cos A \cos B + \sin A \sin B$$

$$\sin^2 A + \cos^2 A = 1, \quad \sin 2A = 2 \sin A \cos A$$

$$\cos 2A = 2 \cos^2 A - 1 = 1 - 2 \sin^2 A$$

$$2 \sin A \cos B = \sin(A + B) + \sin(A - B)$$

$$2 \cos A \sin B = \sin(A + B) - \sin(A - B)$$

$$2 \cos A \cos B = \cos(A + B) + \cos(A - B)$$

$$2 \sin A \sin B = \cos(A - B) - \cos(A + B)$$

Hyperbolic Functions

$$\sinh x = \frac{e^x - e^{-x}}{2}, \quad \cosh x = \frac{e^x + e^{-x}}{2}$$

Standard Derivatives

$f(x)$	$f'(x)$
x^n	nx^{n-1}
$\sin ax$	$a \cos ax$
$\cos ax$	$-a \sin ax$
$\tan ax$	$a \sec^2 ax$
e^{ax}	ae^{ax}
$\ln x$	$\frac{1}{x}$
$\sinh ax$	$a \cosh ax$
$\cosh ax$	$a \sinh ax$
$u v$	$u' v + u v'$
$\frac{u}{v}$	$\frac{u' v - u v'}{v^2}$

Standard Integrals

$f(x)$	$\int f(x) dx$
$(ax + b)^n$	$\frac{(ax + b)^{n+1}}{a(n+1)} \quad n \neq -1$
$\sin x$	$-\cos x$
$\cos x$	$\sin x$
e^x	e^x
$\frac{1}{ax + b}$	$\frac{1}{a} \ln(ax + b)$
$\sinh x$	$\cosh x$
$\cosh x$	$\sinh x$
$u v'$	$u v - \int u' v dx$
$\frac{1}{x^2 + a^2}$	$\frac{1}{a} \tan^{-1} \left(\frac{x}{a} \right)$
$\frac{1}{a^2 - x^2}$	$\frac{1}{2a} \ln \left(\frac{a + x}{a - x} \right)$
$\frac{1}{x^2 - a^2}$	$\frac{1}{2a} \ln \left(\frac{x - a}{x + a} \right)$
$\frac{1}{\sqrt{a^2 - x^2}}$	$\sin^{-1} \left(\frac{x}{a} \right)$
$\frac{1}{\sqrt{x^2 + a^2}}$	$\ln \left(x + \sqrt{x^2 + a^2} \right)$
$\frac{1}{\sqrt{x^2 - a^2}}$	$\ln \left(x + \sqrt{x^2 - a^2} \right)$