

## Trigonometrical Formulae

$$\begin{aligned}\sin(A + B) &= \sin A \cos B + \cos A \sin B \\ \sin(A - B) &= \sin A \cos B - \cos A \sin B \\ \cos(A + B) &= \cos A \cos B - \sin A \sin B \\ \cos(A - B) &= \cos A \cos B + \sin A \sin B \\ \sin^2 A + \cos^2 A &= 1, \quad \sin 2A = 2 \sin A \cos A \\ \cos 2A &= 2 \cos^2 A - 1 = 1 - 2 \sin^2 A \\ 2 \sin A \cos B &= \sin(A + B) + \sin(A - B) \\ 2 \cos A \sin B &= \sin(A + B) - \sin(A - B) \\ 2 \cos A \cos B &= \cos(A + B) + \cos(A - B)\end{aligned}$$

## Hyperbolic Functions

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

## Standard Derivatives

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

## Standard Integrals

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