

Derivatives Overview

Derivative Rules:

$$[f(x) + g(x)]' = f'(x) + g'(x) \quad [f(x) \cdot g(x)]' = f'(x)g(x) + f(x)g'(x)$$

$$[f(g(x))]' = f'(g(x))g'(x) \quad \left[\frac{f(x)}{g(x)}\right]' = \frac{f'(x)g(x) - f(x)g'(x)}{g^2(x)}$$

$f(x)$	$\frac{df}{dx}$	$f(x)$	$\frac{df}{dx}$
$a_k x^k$	$ka_k x^{k-1}$	—	—
$\sin x$	$\cos x$	$\arcsin x$	$\frac{1}{\sqrt{1-x^2}}$
$\cos x$	$-\sin x$	$\arccos x$	$\frac{-1}{\sqrt{1-x^2}}$
$\tan x$	$\frac{1}{\cos^2 x}$	$\arctan x$	$\frac{1}{1+x^2}$
a^x	$a^x \ln a$	$\log_a x$	$\frac{1}{\ln a} \frac{1}{x}$
