

Derivative Table

1 Basic Rule

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|----|---|-------------------------|
| 1. | $\frac{d}{dx}(c) = 0$ | The constant rule |
| 2. | $\frac{d}{dx}(cf(x)) = cf'(x)$ | The multiple rule |
| 3. | $\frac{d}{dx}(f(x) \pm g(x)) = f'(x) \pm g'(x)$ | The sum/difference rule |
| 4. | $\frac{d}{dx}(f(x)g(x)) = f'(x)g(x) + f(x)g'(x)$ | The product rule |
| 5. | $\frac{d}{dx}\left(\frac{f(x)}{g(x)}\right) = \frac{f'(x)g(x) - f(x)g'(x)}{g(x)^2}$ | The quotient rule |
| 6. | $\frac{d}{dx}f(g(x)) = f'(g(x))g'(x)$ | The chain rule |
| 7. | $\frac{d}{dx}(x^n) = nx^{n-1}$ | The power rule |

2 Derivative of basic functions

$\frac{d}{dx}(e^x) = e^x$	$\frac{d}{dx}(a^x) = a^x \ln(a)$
$\frac{d}{dx}(\ln(x)) = \frac{1}{x}$	$\frac{d}{dx}(\sin x) = \cos x$
$\frac{d}{dx}(\cos x) = -\sin x$	$\frac{d}{dx}(\tan x) = \sec^2 x$
$\frac{d}{dx}(\cot x) = -\csc^2 x$	$\frac{d}{dx}(\sec x) = \sec x \tan x$
$\frac{d}{dx}(\csc x) = -\csc x \cot x$	$\frac{d}{dx}(\arcsin x) = \frac{1}{\sqrt{1-x^2}}$
$\frac{d}{dx}(\arctan x) = \frac{1}{1+x^2}$	$\frac{d}{dx}(x^n) = nx^{n-1}$