





Derivatives Cheat Sheet

Rule	Function	Derivative	Example
Power Rule	x^n 	nx^{n-1}	$\frac{d}{dx} x^4 = 4x^3$
Product Rule	fg 	$f'g + fg'$	$\frac{d}{dx} x^4y^5 = 5x^4y^4 + 4x^3y^5$
Quotient Rule	$\frac{f}{g}$ 	$\frac{f'g - g'f}{g^2}$	$\frac{d}{dx} \frac{\cos(x)}{x} = \frac{x(-\sin(x)) - \cos(x)(1)}{x^2} = \frac{\cos(x) + x\sin(x)}{x^2}$
Chain Rule	$f(g(x))$ 	$f'(g(x))g'(x)$	$\frac{d}{dx} \cos(x^2) = -\sin(x^2) 2x = -2x\sin(x^2)$

Tip!

Remember the derivative of trig functions:

$$\frac{d}{dx} \cos(x) = -\sin(x)$$

$$\frac{d}{dx} \sin(x) = \cos(x)$$

$$\frac{d}{dx} \tan(x) = \sec^2(x)$$