

Basic Derivatives and Formulas

Basic Properties and Formulas

If $f(x)$ and $g(x)$ are differentiable functions (the derivative exists), c and n are any real numbers,

1. $(cf)' = cf'(x)$

5. $\frac{d}{dx}(c) = 0$

2. $(f \pm g)' = f'(x) \pm g'(x)$

6. $\frac{d}{dx}(x^n) = nx^{n-1}$ **Power Rule**

3. $(fg)' = f'g + fg'$ **Product Rule**

4. $\left(\frac{f}{g}\right)' = \frac{f'g - fg'}{g^2}$ **Quotient Rule**

7. $\frac{d}{dx}(f(g(x))) = f'(g(x))g'(x)$
This is the **Chain Rule**