Summary of Differentiation Rules

Differentiation Rules

General Formulas

1. $\frac{d}{dx}(c) = 0$, *where* c *is a constant*

2. $\frac{d}{dx}[cf(x)] = cf'(x)$

3. $\frac{d}{dx}[f(x) + g(x)] = f'(x) + g'(x)$

4. $\frac{d}{dx}[f(x) - g(x)] = f'(x) - g'(x)$

Product Rule

5. $\frac{d}{dx}[f(x)] = f(x)g'(x) + g(x)f'(x)$

Quotient Rule

6. $\frac{d}{dx}\left[\frac{f(x)}{g(x)}\right] = \frac{g(x)f'(x) - f(x)g'(x)}{[g(x)]^2}$

Chain Rule

7. $\frac{d}{dx}f(g(x)) = f'(g(x))g'(x)$

Power Rule

8. $\frac{d}{dx}(x^n) = nx^{n-1}$