

Power Rule

$$f(x) = x^a, f'(x) = ax^{a-1}$$

Sums and Differences

$$F(x) = f(x) + g(x), F'(x) = f'(x) + g'(x)$$

$$G(x) = f(x) - g(x), G'(x) = f'(x) - g'(x)$$

Product Rule

$$F = f \cdot g, F'(x) = f'(x) \cdot g(x) + f(x) \cdot g'(x)$$

Quotient Rule

$$F = \frac{f}{g}, F'(x) = \frac{f'(x) \cdot g(x) - f(x) \cdot g'(x)}{[g(x)]^2}$$

Chain Rule

$$F(x) = f(g(x)), F'(x_0) = f'(u_0)g'(x_0) = f'(g(x_0))g'(x_0).$$

Exponential Functions

$$y = e^x, y' = e^x$$

$$y = a^x, y' = a^x \cdot \ln(a).$$

Logarithmic Functions

$$y = \ln(x), y' = \frac{1}{x}.$$

$$y = \log_a(x), y' = \frac{1}{x \ln(a)}$$