Basic Derivative formulae

***u* = *f(x)* and *v* = *g(x)*:** represent differentiable functions of **x**.
c is a constant.

Derivative of a constant	$\frac{dc}{dx} = 0$
Derivative of constant multiple	$\frac{d}{dx}(cu) = c\frac{du}{dx}$
Derivative of sum or difference	$\frac{d}{dx}(u \pm v) = \frac{du}{dx} \pm \frac{dv}{dx}$
Product Rule	$\frac{d}{dx}(uv) = u\frac{dv}{dx} + v\frac{du}{dx}$
Quotient Rule	$\frac{d}{dx}\left(\frac{u}{v}\right) = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$
Chain Rule	$\frac{dy}{dx} = \frac{dy}{du}\frac{du}{dx}$

Basic Derivative formulas

u* = *f(x): a function of **x**. ***a*** is a constant; **n** is a integer.

$$\frac{d}{dx}\,x^n = nx^{n-1}$$

$$\frac{d}{dx}\,u^n = nu^{n-1}\,\frac{du}{dx}$$

$$\frac{d}{dx}\,a^x = (\ln a)\,a^x$$

$$\frac{d}{dx}\,a^u = (\ln a)\,a^u\,\frac{du}{dx}$$

$$\frac{d}{dx}\,e^x = e^x$$

$$\frac{d}{dx}\,e^u = e^u\,\frac{du}{dx}$$

$$\frac{d}{dx}\,\log_a x = \frac{1}{(\ln a)\,x}$$

$$\frac{d}{dx}\,\log_a u = \frac{1}{(\ln a)\,u}\,\frac{du}{dx}$$

$$\frac{d}{dx}\,\ln x = \frac{1}{x}$$

$$\frac{d}{dx}\,\ln u = \frac{1}{u}\,\frac{du}{dx}$$