

Basic Formulae For Differentiation

(1) If c is constant, then $\frac{dc}{dx} = 0$

(2) If $y = cx$, where c is constant, then
$$\frac{dy}{dx} = \frac{d(cx)}{dx} = c \frac{dx}{dx} = c$$

(3) If $y = c.u$ where c is constant and u is a function of x , then

$$\frac{dy}{dx} = \frac{d(cu)}{dx} = c \frac{du}{dx}$$

(4) If $y = x^n$, where n is a real number, then

$$\frac{dy}{dx} = \frac{dx^n}{dx} = n x^{n-1}$$

(5) If $y = u^n$, where n is a real number and u is a function of x , then

$$\frac{dy}{dx} = \frac{d(u^n)}{du} \frac{du}{dx} = n u^{n-1} \frac{du}{dx}$$

(6) If $y = u + v$, where u and v are the functions of x , then

$$\frac{dy}{dx} = \frac{du}{dx} + \frac{dv}{dx}$$

(7) If $y = uv$ where u and v are the functions of x , then

$$\frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$$