Diffrentiation = अवकलन

01. Constant rule

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

$$\frac{d}{dx}(2) = 0 \; Ans$$

$$\frac{\mathbf{d}}{\mathbf{dx}}(\mathbf{5}) = \mathbf{0} \; \boldsymbol{Ans}$$

$$\frac{d}{dx}(15) = 0 \; Ans$$

02. Power rule

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

$$\mathbf{y = x^2}$$

$$\frac{\mathbf{d}}{\mathbf{dx}}(\mathbf{x^2}) = \mathbf{2}x^{2-1} = 2x \; Ans$$

$$\mathbf{y = x^5}$$

$$\frac{\mathbf{d}}{\mathbf{dx}}\left(x^5\right) = 5x^{5-1} = 5x^4 \; Ans$$

03. Power rule for Negative integers

$$y = \frac{1}{x} = x^{-1}$$

$$(-1)x^{-1-1}\frac{d}{dx}(x) = -1x^{-2}(1) = \frac{-1}{x^2}\ \text{Ans}$$

$$y = 4x^{-3}$$

$$\frac{d}{dx}(4x^{-3}) = 4\frac{d}{dx}(-3x^{-3-1}) = 4(-3x^{-4})$$

$$= -12x^{-4} = \frac{-12}{x^4}\ Ans$$

04. Constant multiple rule

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

$$y = 3x^4$$

$$\frac{d}{dx}(3x^4) = 3\frac{d}{dx}(4x^{4-1}) = 3(4x^3) = 12x^3\ \text{Ans}$$

$$y = 2x^5$$

$$\frac{d}{dx}(2x^5) = 2\frac{d}{dx}(5x^{5-1}) = 2(5x^{4)} = 10x^4\ \text{Ans}$$