

Diffrentiation = अवकलन

05. Sum rule

$$\frac{d}{dx}(u + v) = \frac{du}{dx} + \frac{dv}{dx}$$

$$y = x^3 + 3x$$

$$\begin{aligned}\frac{d}{dx}(x^3 + 3x) &= \frac{d}{dx}(x^3) + \frac{d}{dx}(3x) \\ &= 3x^{3-1} + 3 \frac{d}{dx}(x) = 3x^2 + 3(1) = 3x^2 + 3 \text{ Ans}\end{aligned}$$

$$y = x^4 + 12x$$

$$\begin{aligned}\frac{d}{dx}(x^4 + 12x) &= \frac{d}{dx}(x^4) + \frac{d}{dx}(12x) \\ &= 4x^{4-1} + 12 \frac{d}{dx}(x) = 4x^3 + 12(1) = 4x^3 + 12 \text{ Ans}\end{aligned}$$

$$y = x^3 + \frac{4}{3}x - 5x$$

$$\begin{aligned}\frac{d}{dx}\left(x^3 + \frac{4}{3}x - 5x\right) &= \frac{d}{dx}(x^3) + \frac{d}{dx}(4x^2) - \frac{d}{dx}(5x) \\ &= 3x^{3-1} + 4 \frac{d}{dx}(x^2) - \frac{d}{dx}(x) = 3x^2 + 4(2x^{2-1}) - 5(1) \\ &= 3x^2 + 4(2x) - 5 \\ &= 3x^2 + 8x - 5 \text{ Ans}\end{aligned}$$