

Question 3

a) Diff. Differentiate

$$a) y = 4x^6$$

$$\frac{dy}{dx} = \cancel{6}(\cancel{4}x) \cdot 6 \times 4x^5$$

$$= \frac{24x^5}{1}$$

$$b) y = 6x^{-6}$$

$$\frac{dy}{dx} = -6 \times 6x^{-7}$$

$$= -36x^{-7}$$

$$c) y = 4x^3 + 3x^2 + 14x - 7$$

$$\frac{dy}{dx} = 12x^2 + 6x + \frac{1}{x}$$

$$d) y = (7x+3)^5 = 7x^5 + 3^5 = 7x^5 + 243$$

$$\frac{dy}{dx} = 35x^4$$

$$e) y = \frac{9+18x^3}{3x^2} = \frac{9}{3x^2} + \frac{18x^3}{3x^2} = \frac{9}{3x^2} + 6x$$

$$\frac{dy}{dx} = \frac{3x^2(0) - 9(2)}{(3x^2)^2}$$

$$\frac{dy}{dx} = \frac{3x^2(0) - 9 \times 6x}{(3x^2)^2}$$

$$= \frac{-54x}{(3x^2)^2}$$

$$= \frac{-54}{3x^2}$$