

i.i)  $y = 3x^{\frac{3}{2}} + \frac{3}{x^2} - 6x$

$$\frac{dy}{dx} = \frac{9}{2}x^{\frac{1}{2}} - 6x^{-3} - 6$$

$$= \frac{9}{2}x^{\frac{1}{2}} - \frac{6}{x^3} - 6$$

ii)  $y = \sec^3(4x)$

~~$\frac{dy}{dx} = 3 \sec^2(4x) \times \sec(4x) \times 4$~~

$$\frac{dy}{dx} = 3 \sec^2(4x) \times \sec(4x) \tan(4x) \times 4$$

$$= 3 \sec^3(4x) \tan(4x) \times 4$$

$$= 12 \sec^3(4x) \tan(4x)$$

v)  $y = (x + \sin 2x)$

$$\frac{dy}{dx} = 2 \cos 2x + 1$$

vi)  $\frac{1-10x}{(2x-1)^2}$

~~$\frac{dy}{dx} = \frac{1-10x}{(2x-1)^2}$~~

$$u = 1 - 10x \quad v = (2x - 1)^2$$

$$\frac{du}{dx} = -10 \quad \frac{dv}{dx} = 2(2x - 1) \times 2 = 4(2x - 1)$$

$$\frac{dy}{dx} = \frac{(2x - 1)^2(-10) - (1 - 10x) \times 4(2x - 1)}{(2x - 1)^4}$$