

Q1)

i) $y = 7x^3 - 2x^2 + x + 2$

$$\frac{dy}{dx} = 21x^2 - 2(2x) + 1$$

$$= 12x^2 - 4x + 1$$

ii) $y = (x+3)(x+2)$

$$y = x^2 + 2x + 2x + 6$$

$$y = x^2 + 4x + 6$$

$$\frac{dy}{dx} = 2x + 4$$

iii) $y = \frac{1}{3}x^3 + \sin 3x$

$$y = x^3 + 3 \cos 3x$$

$$\frac{dy}{dx} = -3x^2 + 3 \cos 3x$$

iv) $y = x^4 \cos 2x$

$$\frac{dy}{dx} = 4x^3 \cos 2x - 2x^4 \sin 2x$$

v) $y = \frac{e^{2x}}{\cos 2x}$

$$\frac{dy}{dx} = \frac{2e^{2x}}{-\sin 2x}$$

vi) $y = (5x^2 + 2x + 1)^3$

$$y = (10x + 2)^3$$