

Module (ACHA 4006)

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Differentiate

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

$$\frac{dy}{dx} = 21x^2 - 4x + 1$$

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

$$y = x^2 + 2x + 3x + 6$$

$$y = x^2 + 5x + 6$$

$$\frac{dy}{dx} = 2x + 5$$

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

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

(iv) $y = x^4 \tan 2x$

$$\frac{dy}{dx} = 4x^3 \sec^2 2x$$

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

$$\frac{dy}{dx} = \frac{v du}{dx} - \frac{u dv}{dx}$$

$$\frac{dy}{dx} = \frac{v^2}{\cos 2x} (2e^{2x}) - (e^{2x})(\sin 2x)$$

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

$$5(3x^2 + 2x + 1)^4 (6x + 2)$$