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Course: Math 102

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Questions & Answers

(i) If $A = (6u^2 + 8)i + (4u - 10)j + 8u^3k$

$$B = 3ui + (2u - 5)j + 5k$$

(i) Find $d/du(A \cdot B)$

Solu.

$$A = (6u^2 + 8)i + (4u - 10)j + 8u^3k$$

$$B = (3u)i + (2u - 5)j + 5k$$

$$\frac{d}{du}(A \cdot B) = A \cdot \frac{dB}{du} + \frac{dA}{du} \cdot B$$

$$\therefore (A \cdot B) = [18u^3 + 24u] + [8u^2 - 40u + 50] + [40u^3]$$

$$\therefore \frac{d}{du} = [54u^2 + 24] + [16u - 40] + [120u^2]$$
$$= 54u^2 + 16u + 24 - 40 + 120u^2 =$$
$$54u^2 + 16u + 104$$

(ii) $A = (6u^2 + 8)i + (4u - 10)j + (8u^3)k$

$$\frac{dA}{du} = 12u i + 4j + 24u^2 k$$

$$\frac{dA}{du} = 12u i + 4j + 24u^2 k$$