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Computer Engineering

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maths (w/ assignment)

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

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

a) Find $\frac{d}{du}(A \cdot B)$ & $\frac{d}{du}(A - B)$

$$A \cdot B = \langle (6u^2 + 8)i + (4u - 10)j + 8u^3k \rangle \langle 3ui + (2u - 5)j + 5k \rangle$$

$$A \cdot B = 18u^3 + 24u + 8u^2 - 20u - 20 + 50 + 40u^3$$

$$A \cdot B = 18u^3 + 40u^3 + 8u^2 + 24u - 40u + 50$$

$$A \cdot B = 58u^3 + 8u^2 - 16u + 50$$

$$\frac{d}{du}(A \cdot B) = 174u^2 + 16u - 16$$

$$b) \frac{dA}{du} = \frac{dA}{du} = i \frac{d}{du}(6u^2 + 8) + j \frac{d}{du}(4u - 10) + k \frac{d}{du}(8u^3)$$

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