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Computer Engineering
19/ENG02/028

MAT 102

Assignment

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

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

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

ii $\frac{dA}{du}$

i $A \cdot B = (6u^2 + 8)i + (4u + 10)j + 8u^3k \cdot 3ui + (2u - 5)j + 5k$
 $= 18u^3 + 24u + 8u^2 - 20u - 20u + 50 + 40u^3$
 $= 18u^3 + 40u^3 + 8u^2 + 24u - 40u + 50$
 $= 58u^3 + 8u^2 - 16u + 50$

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

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

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