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Course: Maths for 102

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1) If $A = (6u^2 + 8)i + (4u - 10)j + 8u^3k$ and $B = 3ui + (2u - 5)j + 5k$.

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

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

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

$$\begin{aligned} \text{if } A \cdot B &= 3u(6u^2 + 8) + (4u - 10)(2u - 5) + 8u^3(5) \\ &= 18u^3 + 24u + 8u^2 - 20u - 20u + 50 + 40u^3. \end{aligned}$$

$$= 58u^3 + 8u^2 - 16u + 50.$$

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

$\frac{d}{du}$

$$= 174u^2 + 16u - 16$$

$$\text{3) } \frac{dA}{du} = 12ui + 4j + 24u^2k$$