

PINNICK ITSE ORITSESERUNDEDE

CHEMICAL ENGINEERING

19/ENGR01/013

MAT 102 Assignment

Serial Number: 48

Question 1

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

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

ii  $\frac{dA}{du}$

Solution

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

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

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

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