

NAME: AARON ABRAHAM DYEM

DEPARTMENT: COMPUTER ENGINEERING

COURSE: MAT 102

MATRIC NO: 19/Eng02/011

### ASSIGNMENT

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

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

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

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

$$A \cdot B = (18u^3 + 24u)i + (8u^2 - 40u + 10)j + 40u^3k$$

$$\frac{d}{du}(A \cdot B) = \frac{d}{du}(18u^3 + 24u) + \frac{d}{du}(8u^2 - 40u + 10) + \frac{d}{du}(40u^3)$$

$$= A \cdot B = 18u^3 + 24u + 8u^2 - 40u + 10 + 40u^3$$

$$A \cdot B = 58u^3 + 8u^2 - 16u + 10$$

$$\frac{d}{du}(A \cdot B) = \frac{d}{du}(58u^3) + \frac{d}{du}(8u^2) + \frac{d}{du}(-16u) + \frac{d}{du}(10)$$

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

ii)  $\frac{dA}{du}$

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

$$= 12ui + 4j + 24u^2k //$$