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Serial No: 17

Math 102

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

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

$$a) \frac{d}{du} [A \cdot B]$$

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

$$= 18u^3 + 24u + (8u^2 - 40u + 50) + 40u^3$$

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

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

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

$$= (12u)i + 4j + (24u^2)k$$

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