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Civil Engineering

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Math 102

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

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

$$1. (A \cdot B) = [(6u^2 + 8)(3u)] + [(4u - 10)(2u + 5)] + [8u^3 \times 5]$$

$$= [18u^3 + 24u] + [8u^2 + 20u - 20u - 50] + [40u^3]$$

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

$$(A \cdot B) = \frac{d}{du} (58u^3 + 8u^2 + 24u - 50)$$

$$= 174u^2 + 16u + 24$$

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

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