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DEPARTMENT: COMPUTER ENGINEERING

MATRIC NO: 19/ENG02/036

COURSE: MAT 102

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

$$B = 7ui + (2u - 5)j + 5k$$

(a)  $\frac{d}{du} (A - B)$

$$A - B = (8u^3 + 24u)i + (8u^2 - 40u + 50)j + 40u^3k$$

$$\int A - B \, du = \left( \frac{18u^{3+1}}{3+1} + \frac{24u^{1+1}}{1+1} \right) i + \left( \frac{8u^{2+1}}{2+1} - \frac{40u^{1+1}}{1+1} + 50u \right) j + 40u^3k$$

k

$$= \left( \frac{9}{2}u^4 + 12u^2 \right) i + \left( \frac{8}{3}u^3 - 20u^2 + 50u \right) j + 40u^3k$$

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(a)  $d/du (A \cdot B)$

$$A \cdot B = (8u^3 + 24u)i + (8u^2 - 40u + 50)j + 40u^3k$$

$$\int A \cdot B \, du = \left( \frac{8u^{3+1}}{3+1} + \frac{24u^{1+1}}{1+1} \right) i + \left( \frac{8u^{2+1}}{2+1} - \frac{40u^{1+1}}{1+1} + 50u \right) j + \frac{40u^{3+1}}{3+1}$$

$$= \left( \frac{8u^4}{4} + \frac{24u^2}{2} \right) i + \left( \frac{8u^3}{3} - \frac{40u^2}{2} + 50u \right) j + \frac{40u^4}{4} k$$

$$= \left( 2u^4 + 12u^2 \right) i + \left( \frac{8}{3}u^3 - 20u^2 + 50u \right) j + 10u^4 k //$$

(b)  $da/du = \int A \, du$

$$= \left( \frac{6u^{2+1}}{2+1} + 8u \right) i + \left( \frac{4u^{1+1}}{1+1} - 10u \right) j + \frac{8u^{3+1}}{3+1} k$$

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

$$da/du = (2u^3 + 8u)i + (2u^2 - 10u)j + 2u^4k //$$

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$$da/du = (2u^3 + 8u)i + (2u^2 - 10u)j + 2u^4k$$