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MATH 102 ASSIGNMENT

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MAT 102

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

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

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

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

$\therefore \frac{d}{du}(A \cdot B) = \frac{d}{du}(58u^3 + 8u^2 + 24u - 50) = \underline{174u^2 + 16u + 24}$

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

$= \underline{12u\hat{i} + 4\hat{j}} + 24u^2\hat{k}$