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

$\bar{B} = 3ui + (2u-5)j + 5k$

(i) $\frac{d}{du}(A \cdot B) = \bar{A} \cdot \frac{dB}{du} + \frac{dA}{du} \cdot \bar{B}$

$\frac{dB}{du} = 3i + 2j$

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

$A \cdot dB/du$

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

$\bar{A} \cdot \frac{dB}{du} = 18u^2 + 24 + 8u - 20$

$= 18u^2 + 8u + 4$

$\bar{B} \cdot \frac{dA}{du} = 3ui + (2u-5)j + 5k$

$= 36u^2 + 8u - 20 + 120u^2$

$= 156u^2 + 8u - 20$

$\frac{d}{du}(A \cdot B) = 18u + 8u + 4 + 156u^2 + 8u - 20$

$= 174u^2 + 16u - (-16)$

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

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