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DEPT: MECHANICAL ENGR.

$$A = 3i + 4j - 6k$$

$$B = 5i - 11j + 2k$$

$$C = 7i - 7j + k$$

Find.

1) $A \cdot C + B \cdot C$

$$A \cdot C = (3i + 4j - 6k) \cdot (7i - 7j + k)$$

$$= 21i^2 - 28j^2 - 6k^2$$

$$B \cdot C = (5i - 11j + 2k) \cdot (7i - 7j + k)$$

$$= 35i^2 + 77j^2 + 2k^2$$

$$A \cdot C + B \cdot C = (21i^2 - 28j^2 - 6k^2) + (35i^2 + 77j^2 + 2k^2)$$

$$= \underline{\underline{56i^2 + 49j^2 - 4k^2}}$$

$(A - B) \cdot C$

$$A - B = (3i + 4j - 6k) - (5i - 11j + 2k)$$

$$= 3i + 4j - 6k - 5i + 11j - 2k$$

$$= -2i + 15j - 8k$$

$$(A - B) \cdot C = (-2i + 15j - 8k) \cdot (7i - 7j + k)$$

$$= \underline{\underline{-14i^2 - 105j^2 - 8k^2}}$$

$$3. \quad A \cdot (B \times C)$$

$$B \times C = (5i - 11j + 2k) \times (7i - 7j + k)$$

$$= 35i^2 + 77j^2 + 2k$$

$$A \cdot (B \times C) = (3i + 4j - 6k) \cdot (35i + 77j + 2k)$$

$$= \underline{105i + 308j - 12k}$$