

ONYEJESTI KAMSOBECHI PAULA

19/ENG02/055

COMPUTER ENGINEERING

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

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

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

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

$$A \cdot C = (3i + 4j - 6k) \cdot (7i - 7j + k)$$
$$= 21i - 28j - 6k$$

$$B \cdot C = (5i - 11j + 2k) \cdot (7i - 7j + k)$$
$$= 35i + 77j + 2k$$

$$A \cdot C + B \cdot C$$

$$= 21i - 28j - 6k + 35i + 77j + 2k$$
$$= 56i + 49j - 4k$$

2)  $(A - B) \cdot C$

$$(A - B) = (3i + 4j - 6k) - (5i - 11j + 2k)$$
$$= 3i + 4j - 6k - 5i + 11j - 2k$$
$$= -2i + 15j - 8k$$

$$(A - B) \cdot C$$

$$= (-2i + 15j - 8k) \cdot (7i - 7j + k)$$
$$= -14i - 105j - 8k$$

$$\begin{array}{c}
 \cdot (B \times C) \\
 (B \times C)
 \end{array}
 \begin{array}{c}
 + \quad - \quad + \\
 \begin{array}{|c|c|c|}
 \hline
 i & j & k \\
 \hline
 5 & -11 & 2 \\
 7 & -7 & 1 \\
 \hline
 \end{array}
 \end{array}$$

$$i \begin{array}{|c|c|} \hline -11 & 2 \\ \hline -7 & 1 \end{array} - j \begin{array}{|c|c|} \hline 5 & 2 \\ \hline 7 & 1 \end{array} + k \begin{array}{|c|c|} \hline 5 & -11 \\ \hline 7 & -7 \end{array}$$

$$i[-11 + 14] - j[5 - 14] + k[77 + (-35)]$$

$$3i + 9j - 42k$$

$$A \cdot (B \times C)$$

$$(3i + 4j - 6k) (3i + 9j - 42k)$$

$$9i + 36j + 252k$$