

Omnes Michael

~~Omnes Michael~~ Tech

86

Mat 104

Elect/elect engineering

$$(i) A = 3i + 4j - 6k \quad B = 5i - 11j + 2k \quad C = 7i - 7j + k$$

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

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

$$= 21 - 28 - 6$$

$$= -7 - 6 = -13$$

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

$$= 35 + 77 + 2$$

$$= 112 + 2 = 114$$

$$A \cdot C + B \cdot C = -13 + 114$$

$$= 111$$

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

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

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

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

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

$$= -14 - 105 - 8$$

$$= -127 = -127$$

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

$$\begin{vmatrix} 3 & 4 & -6 \\ 5 & -11 & 2 \\ 7 & -7 & 1 \end{vmatrix}$$

$$3 \begin{vmatrix} -11 & 2 \\ -7 & 1 \end{vmatrix} - 4 \begin{vmatrix} 5 & 2 \\ 7 & 1 \end{vmatrix} - 6 \begin{vmatrix} 5 & -11 \\ 7 & -7 \end{vmatrix}$$

$$3[-11 - (-14)] - 4[5 - 14] - 6[-35 - (-77)]$$

$$3(3) - 4(-9) - 6(42)$$

$$= 9 + 36 - 252 = -207$$