

NAME: EKWEZOR CHINAZA UCHENNA  
 DEPARTMENT: ELECTRICAL/ELECTRONICS ENGINEERING  
 MATRIC NO: 191ENG04018 SERIAL NO: 19  
 MATHEMATICS ASSIGNMENT

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

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

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

$$= (3 \times 7) + (4 \times -7) + (-6 \times 1)$$

$$= 21 - 28 - 6 = \underline{\underline{-13}}$$

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

$$= (5 \times 7) + (-11 \times -7) + (2 \times 1)$$

$$= 35 + 77 + 2 = 114$$

$$A \cdot C + B \cdot C = -13 + 114 = \underline{\underline{101}}$$

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

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

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

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

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

$$= (-2 \times 7) + (15 \times -7) + (-8 \times 1)$$

$$= -14 - 105 - 8 = \underline{\underline{-127}}$$

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

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

$$= 3[-11 + 14] - 4[5 - 14] - 6[-35 + 77]$$

$$= 3[3] - 4[-9] - 6[42]$$

$$= 9 + 36 - 252$$

$$= \underline{\underline{-207}}$$