Name: Okwuchi Avitus Chukwuebuka
Department: Chemical Engineering
Matric No: 19/ENG01/010

MAT 102 Assignment

1 If $A = 3i + 4j - 6k$, $B = 5i - 11j + 2k$, $C = 7i - 7j + k$ Find

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

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

$= 21 - 28 - 6$

$= -13$

$= 35 + 77 + 2$

$= 114$

$A \cdot C + B \cdot C = 101$

2 $(A - B) \cdot C$

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

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

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

$= (-14 - 105 - 8)$

$= -127$

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

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

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

$= 3(-11 + 14) - 4(5 - 14) - 6(-35 + 77)$

$= 9 - 36 - 252$

$= -279$