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 Computer Engineering 19/ENG02/051
 MAT 102 Assignment

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

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

$$= 21 - 28 - 6$$

$$= -13$$

$$B \cdot C = (9\hat{i} - 11\hat{j} + 2\hat{k}) \cdot (7\hat{i} - 7\hat{j} + \hat{k})$$

$$= 35 + 77 + 2$$

$$= 114$$

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

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

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

$$= 3\hat{i} + 4\hat{j} - 6\hat{k} - 5\hat{i} + 11\hat{j} - 2\hat{k}$$

$$= -2\hat{i} + 15\hat{j} - 8\hat{k}$$

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

$$= -14 + 105 - 8 =$$

$$= -14 - 105 + 8 = -111 - 127$$

3) $A \cdot (B \times C) = \begin{vmatrix} 3 & 4 & -6 \\ 5 & -11 & 2 \\ 7 & -7 & 1 \end{vmatrix}$

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

$$= 3(-11 - (-14)) - 4(8 - 14) - 6(-35 - (-77))$$

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

$$= 9 + 24 - 252$$

$$= -207$$