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

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

$i \cdot C = 21 - 28 - 6$

$A \cdot C = -13$

$B \cdot C = 35 + 77 + 2$

$B \cdot C = 114$

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

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

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

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

$(A - B) = -2i + 15j - 8k$

$\therefore (A - B) \cdot C = -14 - 105 - 8$

$(A - B) \cdot C = -127$

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

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

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

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

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

$A \cdot (B \times C) = 9 + 36 - 252$

$A \cdot (B \times C) = \underline{-207}$