$i\,[-11+14] - j\,[5-14] + k\,[-77+35]$

$3i + 7j - 42k$

$A \cdot [B \times C]$

$(3i + 4j - 6k) - (3i + 9j - 42k)$

$7i + 36j + 252k$

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$A = 3i + 4j - 6k$

$B = 5i - 11j + 2k$

$C = 7i - 7j + k$

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

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

$21i - 28j - 6k$

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

$= 35i + 77j + 2k$

$A \cdot C + B \cdot C$

$21i - 28j - 6k + 35i + 77j + 2k$

$56i + 49j - 4k$

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

$(A - B) = (18i + 4j - 6k) - (5i - 11j + 2k)$

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

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

$(A - B) \cdot C$

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

$= -14i - 105j - 8k$

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

$(B \times C) \begin{vmatrix} + & - & + \\ i & j & k \\ 5 & -11 & 2 \\ 7 & -7 & 1 \end{vmatrix}$

$i \begin{vmatrix} -11 & 2 \\ -7 & 1 \end{vmatrix} - j \begin{vmatrix} 5 & 2 \\ 7 & 1 \end{vmatrix} + k \begin{vmatrix} 5 & -11 \\ 7 & -7 \end{vmatrix}$