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Computer engineering
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Maths 102

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

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

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

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

Solu

1] $A \cdot (B + 4j - 6k) \times C = (7i - 7j + k)$

$AC = 3i + 7i + 4j - 7j - 6k + k$

$= 10i - 3j - 5k$

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

$BC = 5i + 7i - 11j - 7j + 2 + k$

$= 12i - 4j + 3k$

$A \cdot C + B \cdot C$

$10i - 3j - 5k + 12i + 4j + 3k$

$10i - 12i - 3j - 4j - 5 + 3k$

$-2i + 7j - 8k$

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

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

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

$8i - 9j - 4k \cdot C$

$8i - 9j - 4k \times 7i - 7j + k$

$8i + 7i - 9j - 7j - 4k + k$

$15i + 2j - 3k$

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

$(B \times C) = 12i + 4j + 13k$

$= 3i + 4j - 6k \times 12i + 4j + 13k$

$3i - (2i - 4j - 4j - 6k + 13k$

$-9i + j - 7k$