# Answer on Question #56114 – Math – Vector Calculus

1. Let $A = i - 2j - 3k$, $B = 2i + 3j + k$ and $C = i + 3j - 2k$; compute $A \cdot (B \times C)$.

**Solution**

Vector (cross) product can be rewritten in matrix form and computed:

$$B \times C = \begin{vmatrix} i & j & k \\ 2 & 3 & 1 \\ 1 & 3 & -2 \end{vmatrix} = i \begin{vmatrix} 3 & 1 \\ 3 & -2 \end{vmatrix} - j \begin{vmatrix} 2 & 1 \\ 1 & -2 \end{vmatrix} + k \begin{vmatrix} 2 & 3 \\ 1 & 3 \end{vmatrix} = (-6 - 3)i + (4 + 1)j +$$
$$+(6 - 3)k = -9i + 5j + 3k.$$

Now we can compute:

$$A \cdot (B \times C) = (i - 2j - 3k) \cdot (-9i + 5j + 3k) = 1 \cdot (-9) - 2 \cdot 5 - 3 \cdot 3 = -9 - 10 - 9 = -28.$$

**Answer:** $A \cdot (B \times C) = -28$.