

Answer on Question #56009 – Math - Vector Calculus

Given that

$$A=3i-2j+k,$$

$$B=2i-4j-3k$$

and

$$C=-i+2j+2k.$$

Find $2A-3B-5C$

($\sqrt{30}$)

($\sqrt{15}$)

($\sqrt{11}$)

($\sqrt{5}$)

Solution

$$\begin{aligned} 2\bar{A} - 3\bar{B} - 5\bar{C} &= \\ &= (2 \times 3 - 3 \times 2 - 5 \times (-1))i + (2 \times (-2) - 3 \times (-4) - 5 \times 2)j + (2 \times 1 - 3 \times (-3) - 5 \times 2)k = \\ &= 5i - 2j + 1k \end{aligned}$$

$$|2\bar{A} - 3\bar{B} - 5\bar{C}| = \sqrt{5^2 + (-2)^2 + 1^2} = \sqrt{25 + 4 + 1} = \sqrt{30}$$

Answer: $\sqrt{30}$.