

Answer on Question #72948 Physics / Other

Given two vectors $\mathbf{A} = 6\mathbf{i} + 3\mathbf{j} - \mathbf{k}$ and $\mathbf{B} = 4\mathbf{i} - 5\mathbf{j} + 8\mathbf{k}$, find the magnitude of the vector $2\mathbf{A} - 3\mathbf{B}$.

Solution:

$$\begin{aligned}2\mathbf{A} - 3\mathbf{B} &= 2(6\mathbf{i} + 3\mathbf{j} - \mathbf{k}) - 3(4\mathbf{i} - 5\mathbf{j} + 8\mathbf{k}) \\ &= 21\mathbf{j} - 26\mathbf{k}\end{aligned}$$

Magnitude

$$|2\mathbf{A} - 3\mathbf{B}| = \sqrt{21^2 + (-26)^2} = 33.4$$

Answer: 33.4

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