

Answer on Question #60781-Physics-Other

If vector $A = 12i - 16j$ and vector $B = -24i + 10j$, what is the direction of the vector $C = 2A - B$?

Solution

$$\mathbf{C} = 2\mathbf{A} - \mathbf{B} = 2(12\mathbf{i} - 16\mathbf{j}) - (-24\mathbf{i} + 10\mathbf{j}) = 48\mathbf{i} - 42\mathbf{j}$$

$$\theta = \tan^{-1} \frac{-42}{48} = -\tan^{-1} 0.875 \approx -41.2^\circ$$

The direction of the vector $C = 2A - B$ is 41.2° below the positive x-direction.

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