

**Answer on Question #60781-Physics-Other**

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

**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  $\mathbf{C} = 2\mathbf{A} - \mathbf{B}$  is  $41.2^\circ$  below the positive x-direction.

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