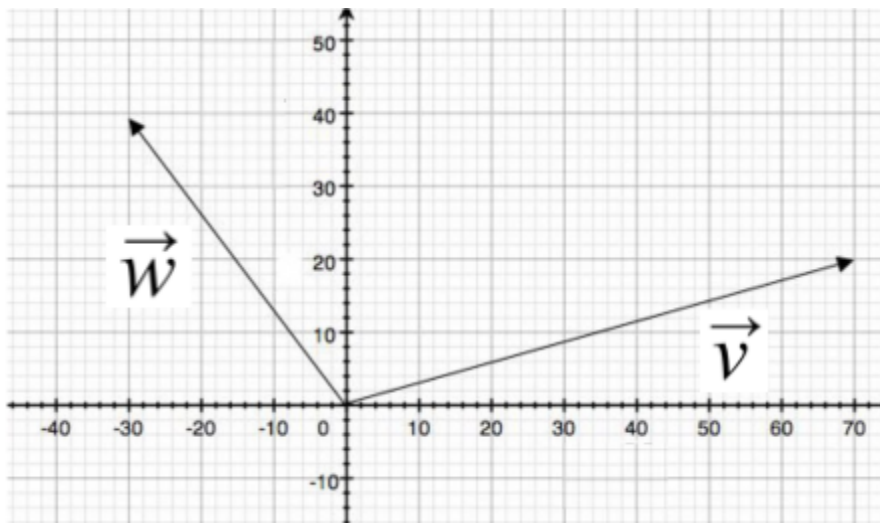




## Mathematics Summer Program Vectors Final Exercise

7/19/2021

There are two vectors,  $\vec{v} = \langle 70, 20 \rangle$  and  $\vec{w} = \langle -30, 40 \rangle$ , as shown in the figure.



1. What is  $\vec{v} + \vec{w}$ ?
2. What is  $\vec{v} - \vec{w}$ ?
3. What is the magnitude of  $\vec{v}$ ? Magnitude of  $\vec{w}$ ?
4. What is the angle between  $\vec{v}$  and the  $x$ -axis?
5. What are the unit vectors of  $\vec{v}$ ? Unit vectors of  $\vec{w}$ ?
6. What is  $\vec{v} \cdot \vec{w}$ ?
7. What is the angle between  $\vec{v}$  and  $\vec{w}$ ?
8. What third vector could be added so that the sum of the three equals the zero vector?

Note: In your answers, round everything to 3 significant figures, if necessary.