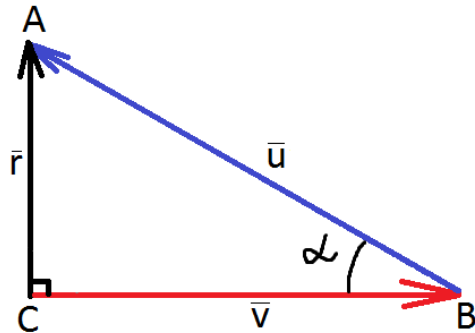


If \vec{v} and \vec{u} are two vectors and \vec{r} is their resultant and \vec{r} is perpendicular to \vec{v} and $1/2$ of \vec{u} then what is angle between \vec{v} and \vec{u}

Solution:



The beginning of the vector \vec{r} - the beginning of the vector \vec{v} and the end vector \vec{r} - end of the vector \vec{u}

$$\vec{u} + \vec{v} = \vec{r}$$

$$|\vec{r}| = \frac{1}{2} |\vec{u}|$$

We have a right triangle ABC, we can simply find the sine of the angle alpha (α - the angle between the vectors \vec{u} and \vec{v})

$$\sin \alpha = \frac{AC}{AB} = \frac{|\vec{r}|}{|\vec{u}|} = \frac{\frac{1}{2} |\vec{u}|}{|\vec{u}|} = \frac{1}{2}$$

$$\alpha = 30^\circ \left(\frac{\pi}{6} \right)$$

Answer: angle between \vec{u} and \vec{v} is $\alpha = 30^\circ \left(\frac{\pi}{6} \right)$