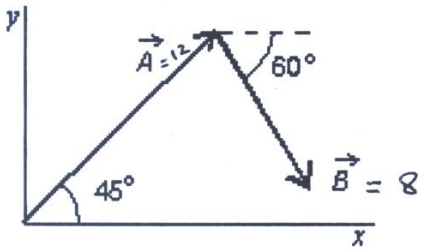
Key

Phys-011 Spring 042 Quiz # 2

Name: **ID #**

In the diagram, $\vec{A}$ has magnitude 12 and makes an angle of 45 with the +ve x-axis counterclockwise, while $\vec{B}$ has magnitude 8 and makes an angle of 60 with the +ve x-axis clockwise.



a- Resolve vectors **A** and **B** to components.

Ax = $12 \cos 45 = 8.5$

Ay = $12 \sin 45 = 8.5$

Bx = $8 \cos 60 = 4$

By = $-8 \sin 60 = -6.9$

b- Find the components of the resultant vector **R** = **A** + **B**.

Rx = $A_x + B_x = 8.5 + 4 = 12.5$

Ry = $A_y + B_y = 8.5 - 6.9 = 1.6$

c- Find the magnitude of vector **R**.

$$|R| = \sqrt{R_x^2 + R_y^2} = \sqrt{(12.5)^2 + (1.6)^2} = 12.6$$

d- Find the direction of vector **R** (the angle form +ve x-axis).

$$\theta = \tan^{-1}\left(\frac{R_y}{R_x}\right) = \tan^{-1}\frac{1.6}{12.5} = 7.3^\circ$$

e- In which quadrant is vector **R** located?

Since R_x is positive

and R_y " "

$\Rightarrow \vec{R}$ is in the 1st Quadrant.