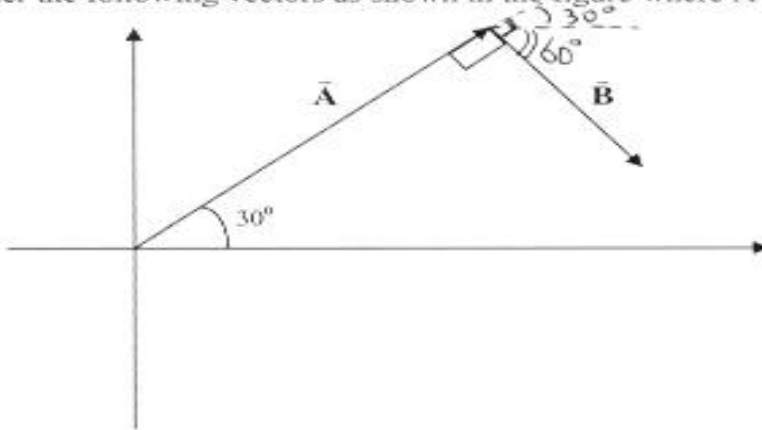


Physics 101Rec
Quiz#2
Chapter 3

Instructor: Dr. A. Mekki

Name: Key Id: _____ Sect: _____Consider the following vectors as shown in the figure where $A = 10$ m and $B = 5$ m.(a) What are the x and y components of vectors \vec{A} and \vec{B} ?

$$A_x = 10 \cos 30^\circ = 8.7 \text{ m}$$

$$A_y = 10 \sin 30^\circ = 5 \text{ m}$$

$$B_x = 5 \cos 60^\circ = 2.5 \text{ m}$$

$$B_y = -5 \sin 60^\circ = -4.3 \text{ m}$$

(b) What is the magnitude and direction of the resultant vector $\vec{R} = \vec{A} + \vec{B}$?

$$\begin{aligned} \vec{R} &= (A_x + B_x)\hat{i} + (A_y + B_y)\hat{j} \\ &= 11.2\hat{i} + 0.7\hat{j} \end{aligned}$$

$$|\vec{R}| = \sqrt{(11.2)^2 + (0.7)^2} = \boxed{11.22 \text{ m}}$$

$$\theta = \tan^{-1}\left(\frac{0.7}{11.2}\right) = \boxed{3.6^\circ}$$