

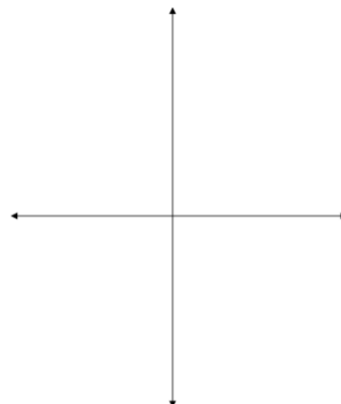
Section 6-6 Vector Addition Continued

We write vectors with their horizontal and vertical components.

If \vec{v} is a vector in the direction θ in standard position, then

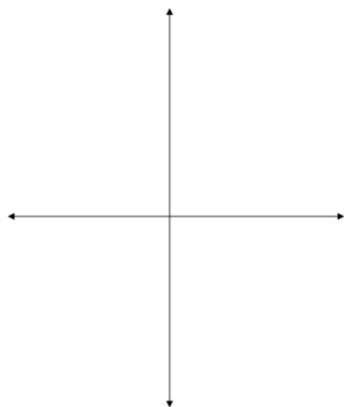
$$\vec{v} = x\vec{i} + y\vec{j}$$

where $x = |\vec{v}| \cos \theta$ and $y = |\vec{v}| \sin \theta$

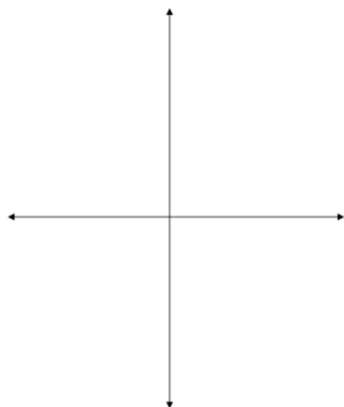


Resolve a vector into horizontal and vertical components.

1. Vector \vec{a} has magnitude of 20 and direction of 43° from the horizontal.

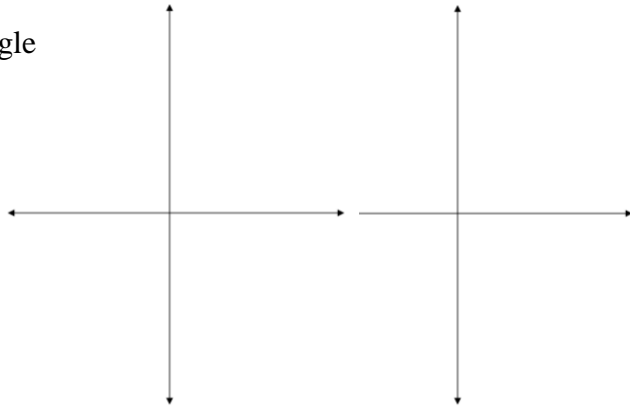


2. Vector \vec{a} has magnitude of 2000 and direction of 207° from the horizontal.



3. Vector \vec{a} is 5 at 70° , and vector \vec{b} is 6 at 25° . Find the resultant vector, \vec{r} , as:

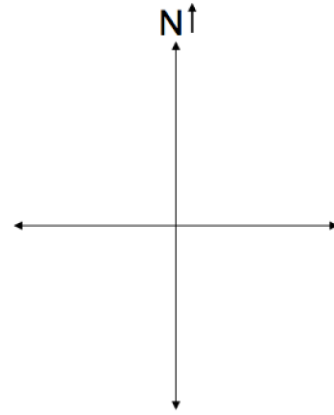
- a. The sum of two components
- b. A magnitude and a direction angle



A **bearing** is an angle measured clockwise from the North

Example: Bearing of 250°

Example: Bearing of 70°



4. A ship moves west (bearing of 270°) for 120 miles and then turns and moves on a bearing of 130° for another 200 miles.
 - a) How far is the ship from its starting point?
 - b) What is the ship's bearing from its starting point?

5. A plane flies 30 miles on a bearing of 200° and then turns and flies 40 miles on a bearing of 10° . Find the resultant displacement vector as a distance and a bearing.