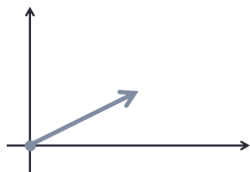


Magnitude and Direction of a Vector Notes

Magnitude of a Vector ...

- is its length, $\|\vec{v}\|$

If $\vec{v} = \langle x, y \rangle$, then $\|\vec{v}\| = \sqrt{x^2 + y^2}$.



Direction of a Vector ...

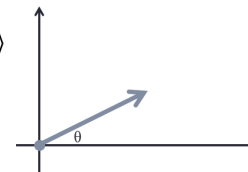
- is the angle it makes with the x-axis.

If $\vec{v} = \langle x, y \rangle$,

then $\vec{v} = \|\vec{v}\| \langle \cos \theta, \sin \theta \rangle$

so $\tan \theta = \frac{y}{x}$

or $\theta = \tan^{-1} \left(\frac{y}{x} \right)$



Example 1:

Find the magnitude and direction of $\vec{v} = \langle -3, -3 \rangle$. Use $[0^\circ, 360^\circ)$.

Example 2:

Find the magnitude and direction of $\vec{v} = \langle -2\sqrt{3}, 2 \rangle$. Use $[0^\circ, 360^\circ)$.