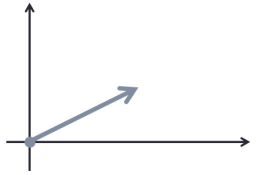
VECTORS

magnitude and direction

Magnitude of a Vector …

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

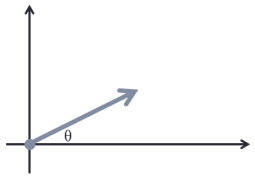
If $\vec{v} = \langle x, y \rangle$, then $\|\vec{v}\| = \sqrt{x^2 + y^2}$.



Direction of a Vector …

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

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



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

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

Example 1:

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

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