Class Discussion

Unit 6 Topic 3 Part 2 Direction angle

Objective: student can perform change of the presentation of a vector from one representation to the other.

From the component form to the magnitude and a direction angle.

$\vec{u} = \langle u_1, u_2 \rangle$ can be represent by its **magnitude** $\|\vec{u}\|$ and its **direction angle** $\theta_{\vec{u}}$

$$\|\vec{u}\| = \sqrt{u_1^{\,2} + u_2^{\,2}}$$

$$\sin\theta_{\vec{u}} = \frac{u_2}{\|\vec{u}\|} \quad \text{and} \quad \cos\theta_{\vec{u}} = \frac{u_1}{\|\vec{u}\|} \quad \text{where} \quad \theta_{\vec{u}} \in [0, 2\pi)$$

Ex1 Given $\vec{w} = \langle \frac{1}{2}, -2 \rangle$, Find the direction angle and the magnitude of $\vec{w}$

Ex2 if $\|\vec{v}\| = 6$ and $\theta_{\vec{v}} = \frac{5\pi}{12}$, find component form of $\vec{v}$

Ex3 In a camp site 3 tents (A, B and C) was set up in the following fashion: tent A is 50 yards from tent B and 20 yards away from tent C. From tent A, tent C is in the direction $N53^\circ E$ and from tent B, tent C is in the direction $S75^\circ W$. If the location of the campfire is chosen to be equidistant to all 3 tents, how far away is the fire to each tent?