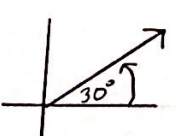


The component form of vector \vec{v} is given. Find the magnitude and direction of \vec{v} .
 Write magnitude as a simplified radical and direction in degrees, rounded to the nearest hundredth. Use $[0^\circ, 360^\circ)$.

- $\vec{v} = \langle \sqrt{3}, 1 \rangle$

magnitude $\|\vec{v}\| = \sqrt{(\sqrt{3})^2 + 1^2} = \sqrt{4} = 2$

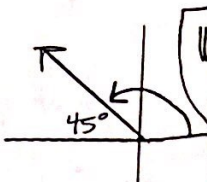
Direction $\theta' = \tan^{-1}(\frac{1}{\sqrt{3}})$
 $\theta' = 30^\circ$



$\|\vec{v}\| = 2$
 $\theta = 30^\circ$
- $\vec{v} = \langle -8, 8 \rangle$

$\|\vec{v}\| = \sqrt{(-8)^2 + (8)^2} = \sqrt{64+64} = \sqrt{128} = 8\sqrt{2}$

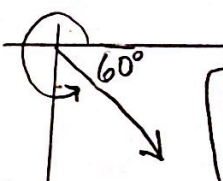
$\theta' = \tan^{-1}(\frac{8}{-8})$
 $\theta' = 45^\circ$ (Reference angle is positive)
 $\theta = 180^\circ - 45^\circ$



$\|\vec{v}\| = 8\sqrt{2}$
 $\theta = 135^\circ$
- $\vec{v} = \langle \sqrt{2}, -\sqrt{6} \rangle$

$\|\vec{v}\| = \sqrt{(\sqrt{2})^2 + (-\sqrt{6})^2} = \sqrt{2+6} = \sqrt{8} = 2\sqrt{2}$

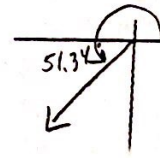
$\theta' = \tan^{-1}(\frac{-\sqrt{6}}{\sqrt{2}})$
 $\theta' = \tan^{-1}(-\sqrt{3}) = 60^\circ$
 $\theta = 360^\circ - 60^\circ$



$\|\vec{v}\| = 2\sqrt{2}$
 $\theta = 300^\circ$
- $\vec{v} = \langle -4, -5 \rangle$

$\|\vec{v}\| = \sqrt{(-4)^2 + (-5)^2} = \sqrt{16+25} = \sqrt{41}$

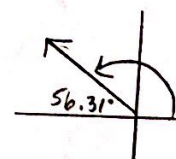
$\theta' = \tan^{-1}(\frac{-5}{-4})$
 $\theta' = 51.34^\circ$
 $\theta = 180^\circ + 51.34^\circ$



$\|\vec{v}\| = \sqrt{41}$
 $\theta = 231.34^\circ$
- $\vec{v} = \langle -2, 3 \rangle$

$\|\vec{v}\| = \sqrt{(-2)^2 + (3)^2} = \sqrt{4+9} = \sqrt{13}$

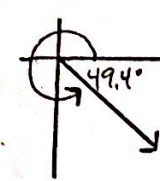
$\theta' = \tan^{-1}(\frac{3}{-2})$
 $\theta' = 56.31^\circ$
 $\theta = 180^\circ - 56.31^\circ$



$\|\vec{v}\| = \sqrt{13}$
 $\theta = 123.69^\circ$
- $\vec{v} = \langle 6, -7 \rangle$

$\|\vec{v}\| = \sqrt{6^2 + (-7)^2} = \sqrt{36+49} = \sqrt{85}$

$\theta' = \tan^{-1}(\frac{-7}{6})$
 $\theta' = 49.4^\circ$
 $\theta = 360^\circ - 49.4^\circ$



$\|\vec{v}\| = \sqrt{85}$
 $\theta = 310.6^\circ$

answers:

- | | | |
|---|---|---|
| 1) $\ \vec{v}\ = 2; \theta = 30^\circ$ | 2) $\ \vec{v}\ = 8\sqrt{2}; \theta = 135^\circ$ | 3) $\ \vec{v}\ = 2\sqrt{2}; \theta = 300^\circ$ |
| 4) $\ \vec{v}\ = \sqrt{41}; \theta = 231.34^\circ$ | 5) $\ \vec{v}\ = \sqrt{13}; \theta = 123.69^\circ$ | 6) $\ \vec{v}\ = \sqrt{85}; \theta = 310.60^\circ$ |