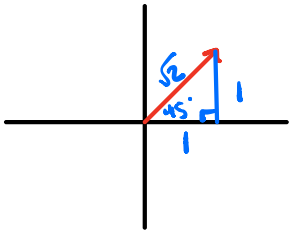
V2 - Component to Polar (Special Right Triangles)

Given a vector in component form, find the vector's magnitude and direction (using an angle in standard position).

1. $\overline{v} = \langle 1, 1 \rangle$



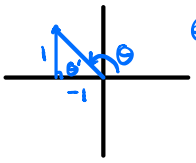
$\|\overline{v}\| = \sqrt{2}$

$\theta = 45°$

$\overline{v} = (r, \theta)$

$= (\sqrt{2}, 45°)$

2. $\overline{u} = \langle -1, 1 \rangle$



$\theta' = 45°$

$\theta = 180° - \theta'$

$= 180° - 45°$

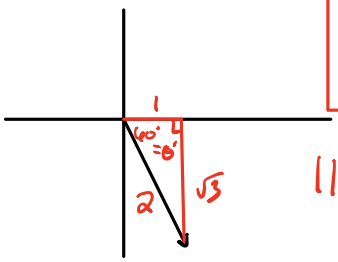
$\theta = 135°$

$\|\overline{u}\| = \sqrt{2}$

Polar Form $= (\|\overline{u}\|, \theta)$

$= (\sqrt{2}, 135°)$

3. $\overline{w} = \langle 1, -\sqrt{3} \rangle$



$\theta = 360° - \theta'$

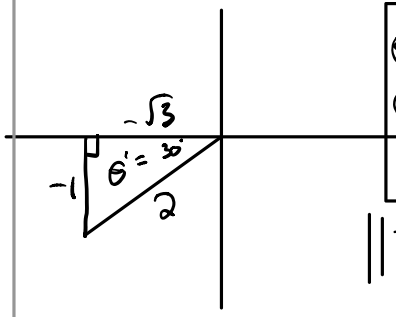
$= 360° - 60°$

$\theta = 300°$

$\|\overline{w}\| = 2$

Polar Form $= (2, 300°)$

4. $\overline{s} = \langle -\sqrt{3}, -1 \rangle$



$\theta = 180° + \theta'$

$\theta = 180 + 30°$

$\theta = 210°$

$\|\overline{s}\| = 2$

Polar Form $= (2, 210°)$