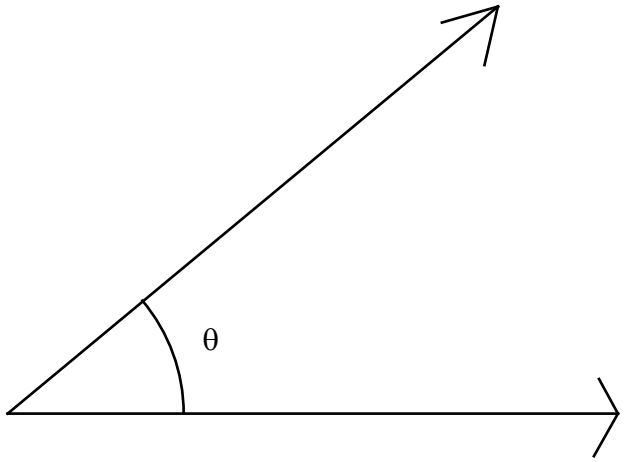
Lesson Plan 11 More Solving Triangles, Polar Coordinates Math 48C Mitchell Schoenbrun

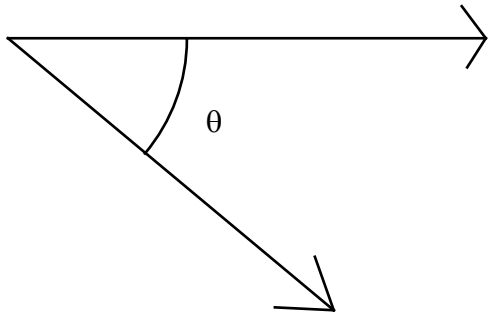
1) Attendance
2) Pass out homework solutions, and go over.

Two new definitions:

Angle of Elevation:



Angle of Depression:

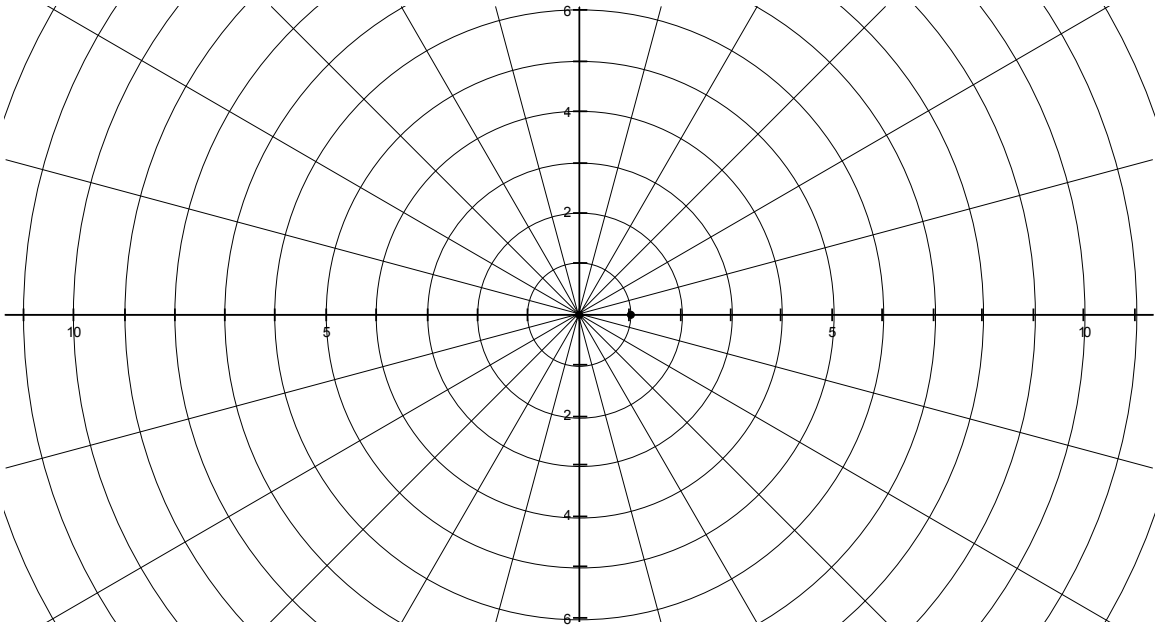


Hand out worksheet.

Polar Coordinates.

What are Polar Coordinates?

r *and* θ



Each point has two coordinates (r,θ) instead of (x,y)

Polar coordinates are not unique, for example

$(0,1)=(0,2)$

$(1,0)=(1,2\pi)$

Converting from Polar to Cartesian Coordinates:

$x = r\cos(\theta)$
$y = r\sin(\theta)$

$r = \sqrt{x^2 + y^2}$
$\theta = \tan^{-1}\left(\frac{y}{x}\right)$ if $x \neq 0$

if x=0 then $\theta = \frac{\pi}{2}$ or $\theta = \frac{3\pi}{2}$

What is a polar equation?

r=5

r=θ

$r = \cos(\theta)$

Pass out some graph paper and have students graph r=1+cos(θ).

Use Grapher to show more examples.

Have students graph these on their calculator.