Warm Up: Survey

- Answer the questions
- Don't leave anything blank
- Use examples as much as you can!

Unit 8 Organizer

The Unit Organizer

NAME _____

DATE _____

④ BIGGER PICTURE

Honors PreCalculus

② LAST UNIT/Experience

7: Conics

① CURRENT UNIT

8: Polar, Parametric, & Vector Functions

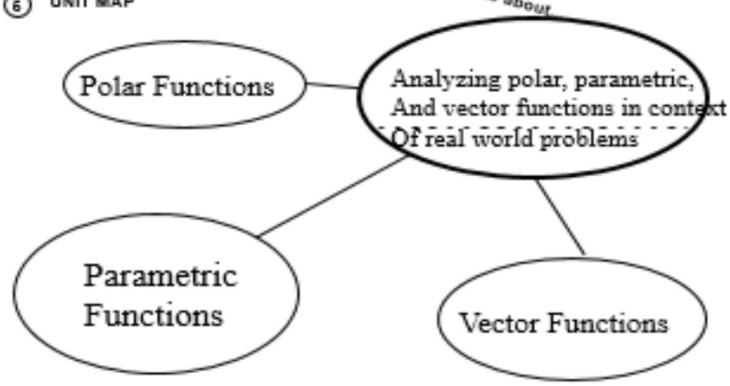
③ NEXT UNIT/Experience

9: Sequences & Series

⑧ UNIT SCHEDULE

1	Polar Functions
	Polar Maps
1	Converting Polars
2	Parametric Functions
1	Vector Functions

⑥ UNIT MAP



⑦ UNIT SELF-TEST QUESTIONS

Can I plot a polar coordinates?
Can I convert between polar and parametric functions?
Can I analyze horizontal and vertical distances using parametric functions?
Can I use vectors to analyze distances?

⑨ UNIT RELATIONSHIPS

Plot

Graph

Analyze

Convert

8.1 I can:

1. plot polar points on a map

Why?

Use of polar coordinates sometimes simpifies complicated rectangular equations.

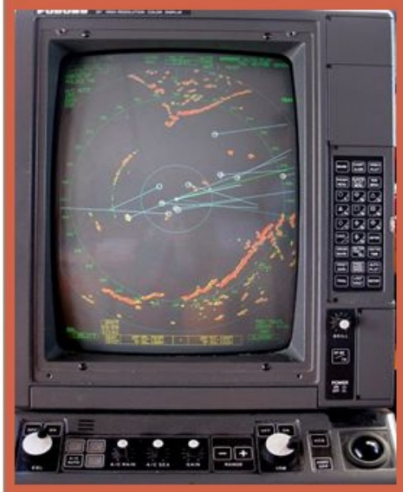
NCSCOS

2.05 Use polar equations to model and solve problems.

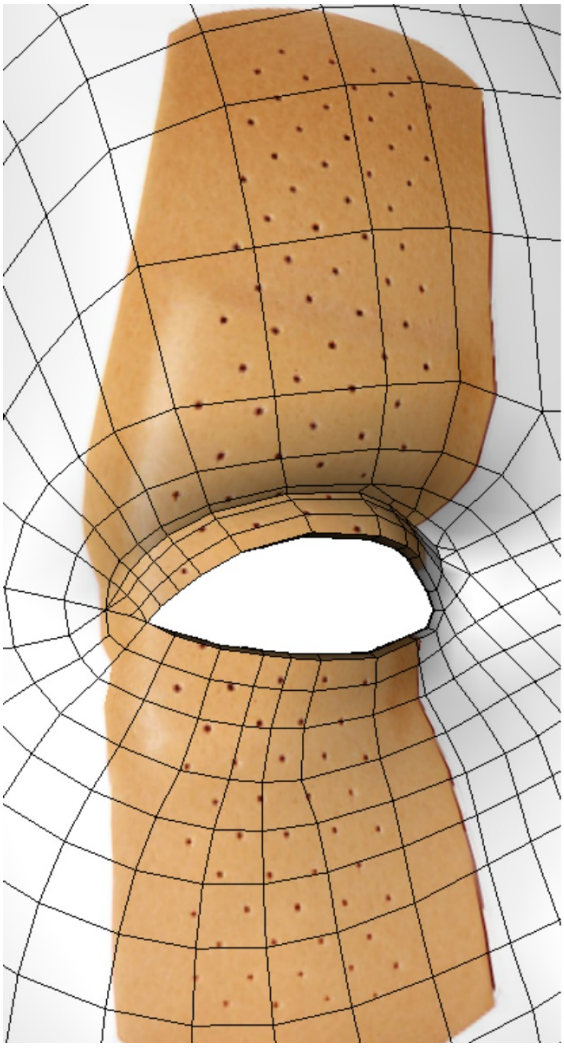
a) Solve using graphs and algebraic properties.

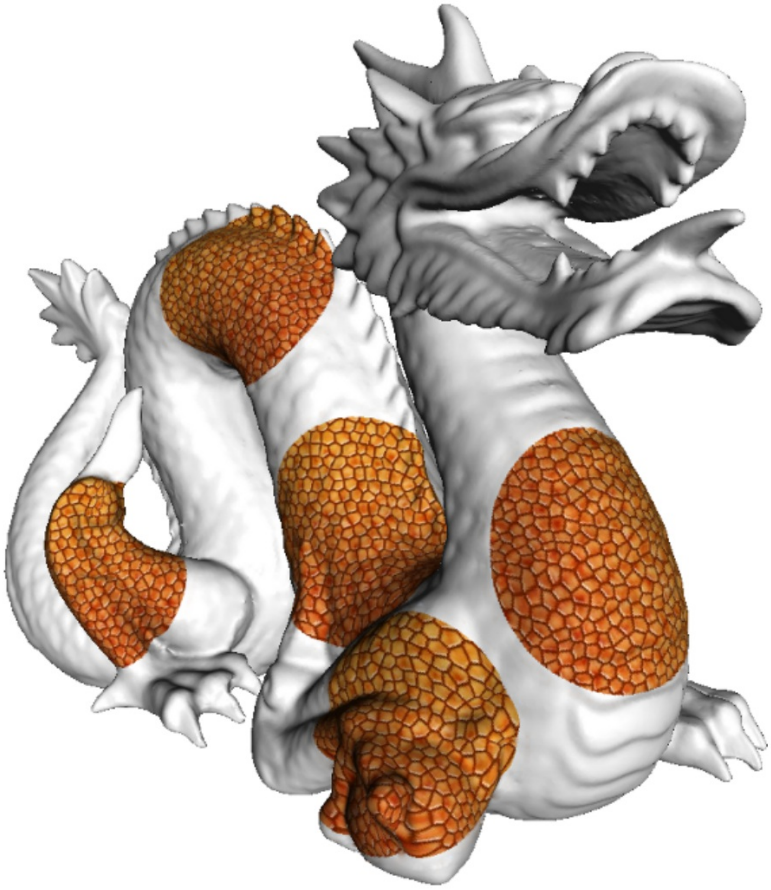
b) Interpret the constants and coefficients in the context of the problem.

Where Are Polar Coordinates and Graphs Used in the Real World?



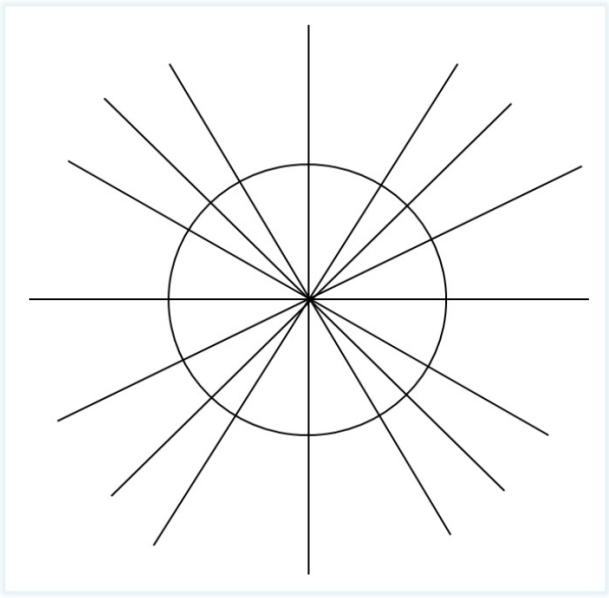
- Radar measures the things it is tracking by the angle and distance from the antenna. This maritime navigation radar shows the ship's position in the center of the display and other ships and land as distance and direction from the ship. (The straight lines attached to the other ships are computerized course projections for those ships.)





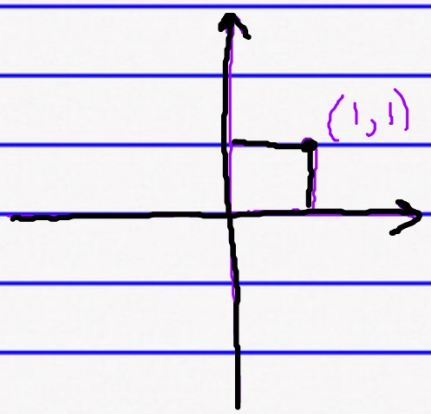
Polar coordinates are...

An extension of the Unit Circle!



Cartesian Plane

Rectangular



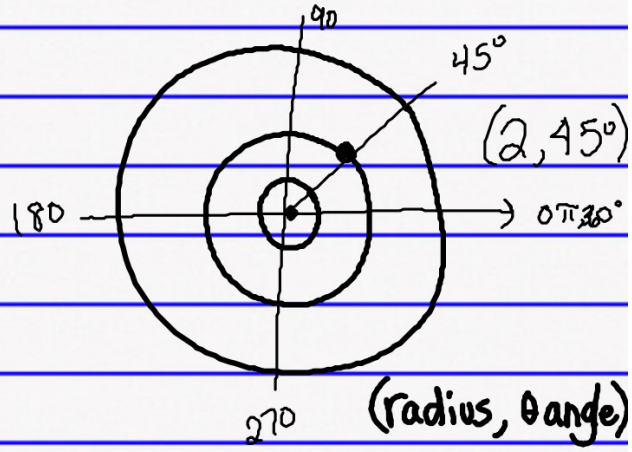
(x,y)

= cartesian coordinates

= rectangular coordinates

Circular Plane

Polar



(radius, θ angle)

(r, θ) ↔ (θ, r)

= polar coordinates

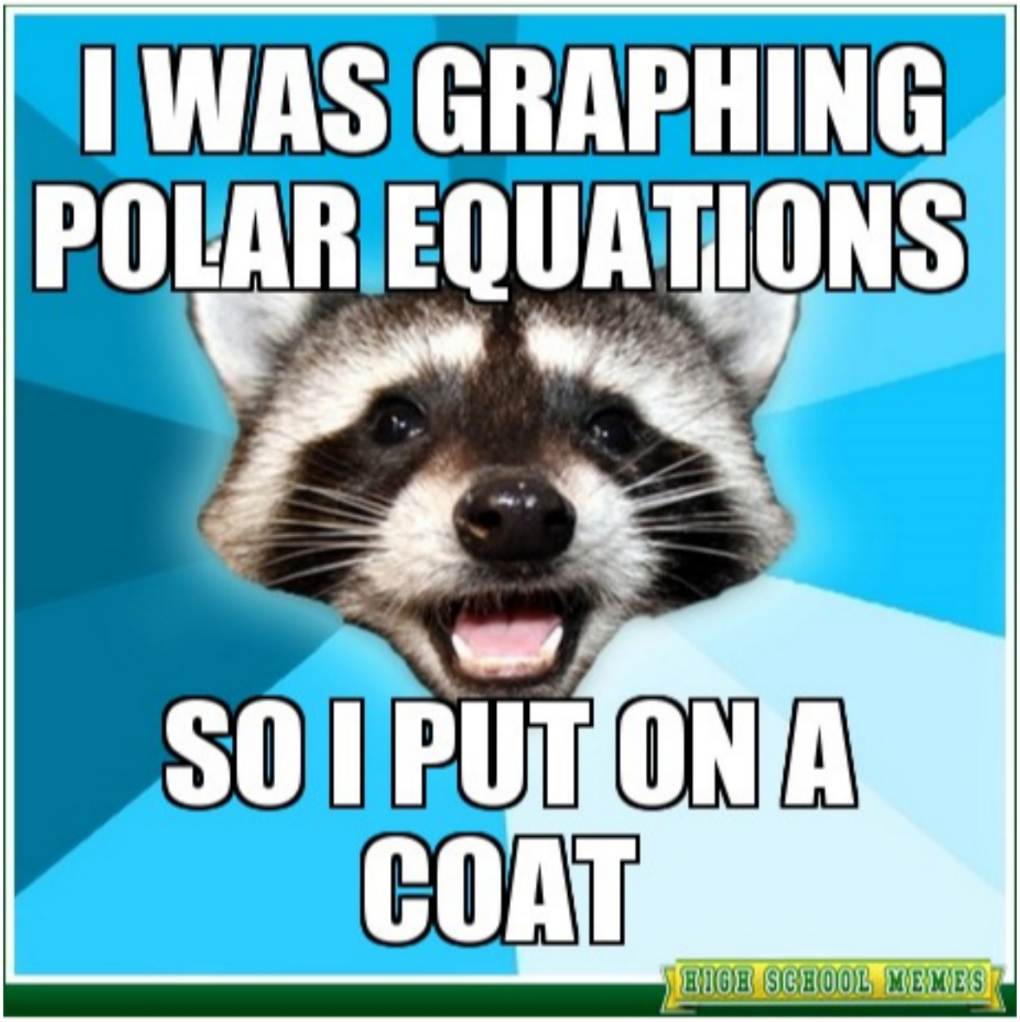
= (some distance, at some ang

What is the difference between the two type of planes?

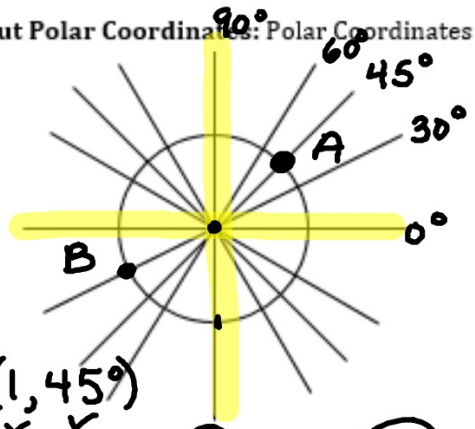
The Polar Bear

Like the Cartesian Bear,
but with transformed coordinates

Dr Mike's Math Games for Kids http://bit.ly/XVYKLh


I WAS GRAPHING POLAR EQUATIONS
SO I PUT ON A COAT
HIGH SCHOOL MEMES

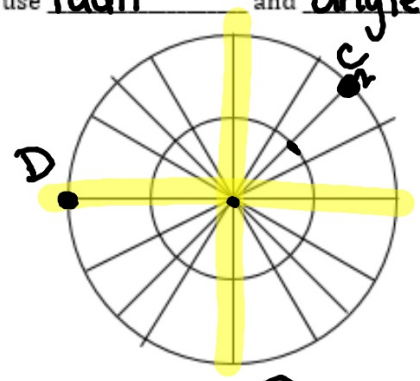
About Polar Coordinates: Polar Coordinates use radii and angles to find points on a circle.



A (1, 45°)

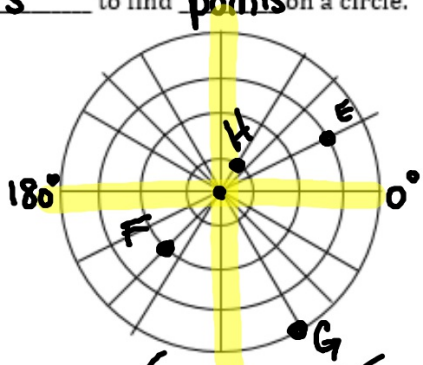
A: point with radius 1, an angle of 45°

B: point with radius 1, an angle of -150°



C: point with radius 2, an angle of 45°

D: point with radius 2, an angle of 180°



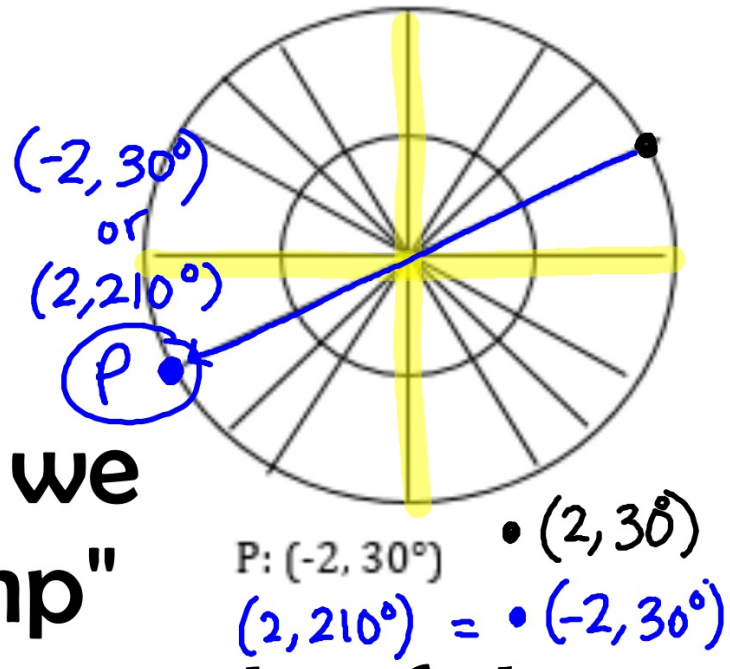
E: (3, 30°)

G: (4, -60°)

H: (1, 420

420
-360
60°

Practice Points:



In this case, the <u>radius</u> is <u>negative</u>, so we need to "jump" to the <u>opposite side</u> of the angle!

Team Tasks

-complete all points

-provide 2 others ways to write 3 coordinates

A: (3, 45°) ⟶ $(3, \frac{\pi}{4})$ or $(-3, 225°)$ or $(3, 405°)$

B: (2, 300°)

C: $(4, \frac{\pi}{2})$

D: (1, -30°)

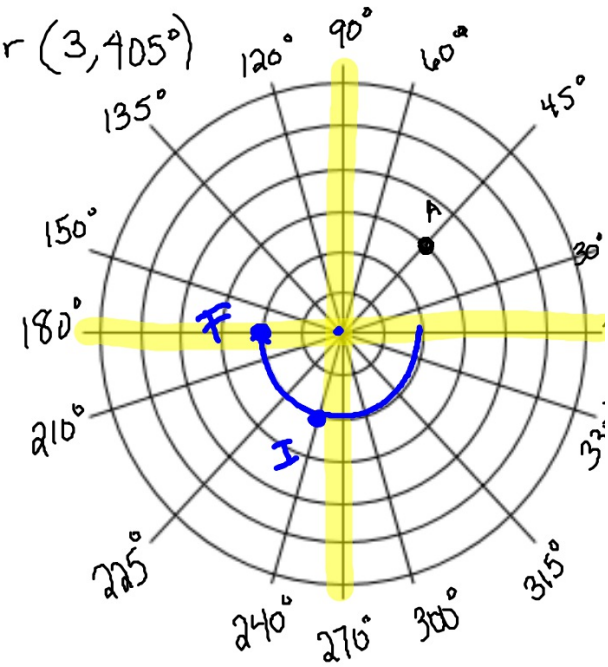
E: (5, -120°)

F: $(2, -\pi)$

G: (3, 540°)

H: (1, 480°)

I: $(2, \frac{10\pi}{3})$ $\cdot \frac{180}{\pi} = \frac{1800}{3} = 600°$



te the coordinates of each point TWO different ways.

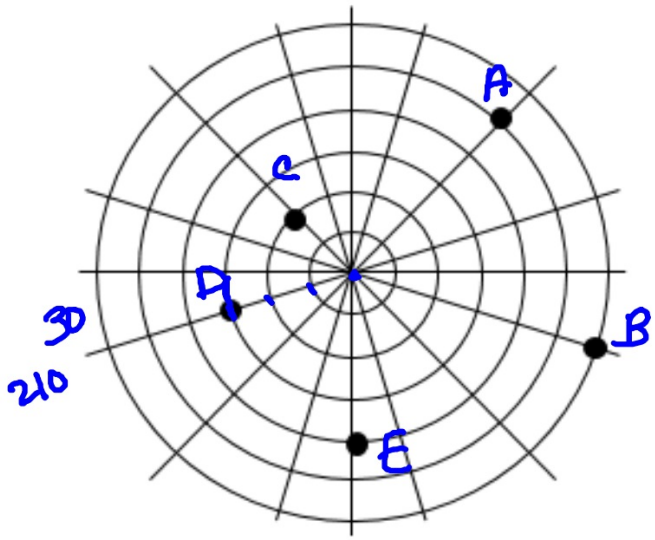
A: $(5, 45°)$ or $(5, \frac{\pi}{4})$
$(-5, 225°)$

B:

C:

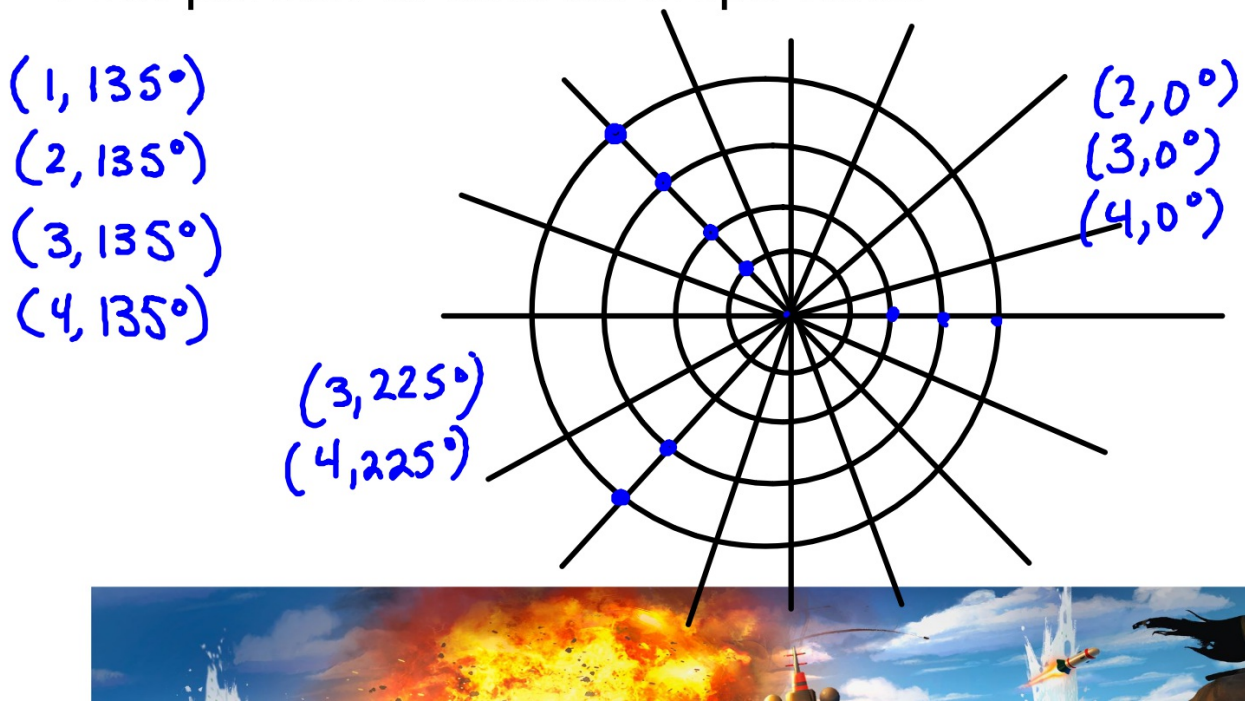
D: $(3, 210°)$

E:



Polar Coordinate Battleship!

- Pick 1 partner!
- Play battleship!
- First person to sink all ships wins!



Exit Journal

1. Explain the difference between polar and cartesian planes.
2. Plot these points:
   a. (4, 30)
   b. (-2, 90)
   c. (3, -135)