



AP Calculus BC

Unit 1 Day 3

Warmup

Convert the following equations from Polar to Cartesian form. Consult with your partner and think creatively! BE PREPARED to SHARE! Do your work NEATLY.

1. $r = -4 \cos \theta$

2. $r \sin \theta = \ln r + \ln \cos(\theta)$

Warmup Answers

1. $r = -4 \cos \theta$

$$x^2 + y^2 = -4x$$

2. $r \sin \theta = \ln r + \ln \cos(\theta)$

$$y = \ln x$$

Do you know what the graphs
of the answers look like??



Graph of problem #1 ...

$$1. r = -4 \cos \theta$$

$$x^2 + y^2 = -4x$$

Complete the square on the equation.

Then confirm by looking at the polar graph.



HW Questions?

Practice converting points

Convert the polar point $(-1, 7\pi)$ to Cartesian coordinates

Convert the Cartesian point $(-\sqrt{3}, -1)$ to polar coordinates

Using your calculator for conversions

- From Polar to Cartesian
 - 2nd APPS
 - Option 7—Will return the x-coordinate
 - Option 8—Will return the y-coordinate
- Let's Practice with $(-1, 7\pi)$

Using your calculator for conversions

- From Cartesian to Polar
 - 2nd APPS
 - Option 5—Will return the r value
 - Option 6—Will return the θ value
- Let's Practice with $(-\sqrt{3}, -1)$

NOTE: Be careful because this answer might not be a multiple choice answer!! You should not rely solely on the calculator for these problems!!

Converting from Cartesian to Polar

Example Problem:

$$x - y = 3$$

Then confirm by comparing polar graph to what we know the given equation looks like.

Example Problem #2:

$$xy = 2$$

Then confirm by comparing polar graph to what we know the given equation looks like.

Example Problem #3:

$$x^2 + (y - 3)^2 = 9$$

Then confirm by comparing polar graph to what we know the given equation looks like.