MTH 32 LECTURE NOTES (Ojakian)

Topic 13: Polar Coordinates

OUTLINE
(References: 7.3)

1. Plotting polar points
2. Graphing polar curves

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1. Polar Points
   (a) Plot some polar points (note: negative radius allowed).
   (b) Identify plotted points.
2. Converting between Coordinates
   (a) Convert: Cartesian to Polar

   PROBLEM 1. *Find the Polar coordinates of the following Cartesian coordinates*

   i. $(0, 3)$
   ii. $(0, -3)$
   iii. $(-1, 1)$
   iv. $(\sqrt{3}, -1)$

   (b) Convert: Polar to Cartesian

   PROBLEM 2. *Find the Cartesian coordinates of the following Polar coordinates*

   i. $(0, 50)$
   ii. $(4, \pi)$
   iii. $(4, 5\pi/4)$
   iv. $(-3, -\pi/6)$

   (c) Practice Problems

   ***PROBLEM* 3.** *Find the Polar coordinates of the following Cartesian coordinates*

   i. $(-2, 0)$ *(no formulas needed!)*
   ii. $(2, -2\sqrt{3})$

   ***PROBLEM* 4.** *Find the Cartesian coordinates of the following Polar coordinates*

   i. $(-2, -\pi/2)$ *(no formulas needed!)*
   ii. $(4, \pi/3)$

3. Graphing polar curves

PROBLEM 5. *Recall: Plot by making a table.*

(a) $y = x^2$

(b) $x = 3$

***PROBLEM* 6.** *Do Class Work now!*

PROBLEM 7. *Graph each of the following polar curves by making a table and using Cartesian graph (r versus θ) as an aid.*

(a) $r = 5$ *for* $\pi/2 \leq \theta \leq 3\pi/2$

(b) $r = 2\cos 2\theta$ *(and do it for limited range of* θ*)*