# Parametrics and Polar Test

DRAFT / QUESTION BANK

## Parametric Equations

1. Eliminate the parameter and find a rectangular equation for the following parametric equations. Show all work.
   1. [3pts] and
   2. [3pts] and
2. Graph the curve whose parametric equations are given, indicating the orientation of the curve with arrows.
   1. [3pts] and where
   2. [3pts] and

## Polar Coordinates

(some of these are designed as MC questions)

1. [2pts] Which of the following is not a possible coordinate for the indicated point.
2. [2pts] Convert to polar coordinates with
3. [2pts] Convert to rectangular coordinates
4. [2pts] Which of the following points is furthest from the origin?
5. [2pts] Which points are between and ?
6. [2pts] Convert to polar:
7. [2pts] Convert to rectangular:
8. [2pts] Which of the following is the graph of ?
9. [2pts] Which of the following is the graph of ?
10. [2pts] What are the -intercepts of

## True/False

1. [1pt] It is possible for a single point in the plane to have the same coordinates in both rectangular and polar representations.
2. [1pt] A function cannot intersect itself
3. [1pt] The graph of a parametric system cannot intersect itself.
4. [1pt] Every polar graph fails the vertical line test.
5. [1pt] Every point in the plane has infinitely many polar coordinate representations.

## Free Response

A baseball pitcher throws a baseball with an initial speed of 138 feet per second at an angle of 20° to the horizontal. The ball leaves the pitcher’s hand at a height of 4 feet above the ground.

1. [1pt] Find parametric equations that describe the motion of the ball as a function of time. (Assume the ground has a -coordinate of 0).
2. [1pt] How long is the ball in the air?
3. [1pt] At what time does the ball reach its maximum height?
4. [1pt] What is the maximum height of the ball?
5. [1pt] Determine the distance the ball travels.