Lab 09

Name:

Start time: Number of questions: 11

This set of questions goes with the pages of applets and activities for Lab 09. Use the applets and activities there to answer the questions.

Question 1 (1 point)

What is the polar graph of sin(t)?

- a. A circle of radius 1 centered at the origin.
- b. A circle of radius 1/2 centered at (0,1/2).
- c. A circle of radius 1/2 centered at (0,-1/2).
- d. A circle of radius 1/2 centered at (1/2,0).
- e. A circle of radius 1/2 centered at (-1/2,0).

Question 2 (1 point)

Set the grapher to start when $t = 0$. What ending value of t is the smallest you need to have the entire circle traced?

- a. Pi/4
- b. Pi/2
- c. Pi
- d. 2*Pi
- e. 4*Pi

Question 3 (.5 points)

Graph sin(n*t) for various integer values of n. Make a conjecture about the number of "petals" on the "rose."

- a. n petals

- b. n petals if n is even, 2*n petals if n is odd
- c. n petals if n is odd, 2*n petals if n is even
- d. 2*n petals

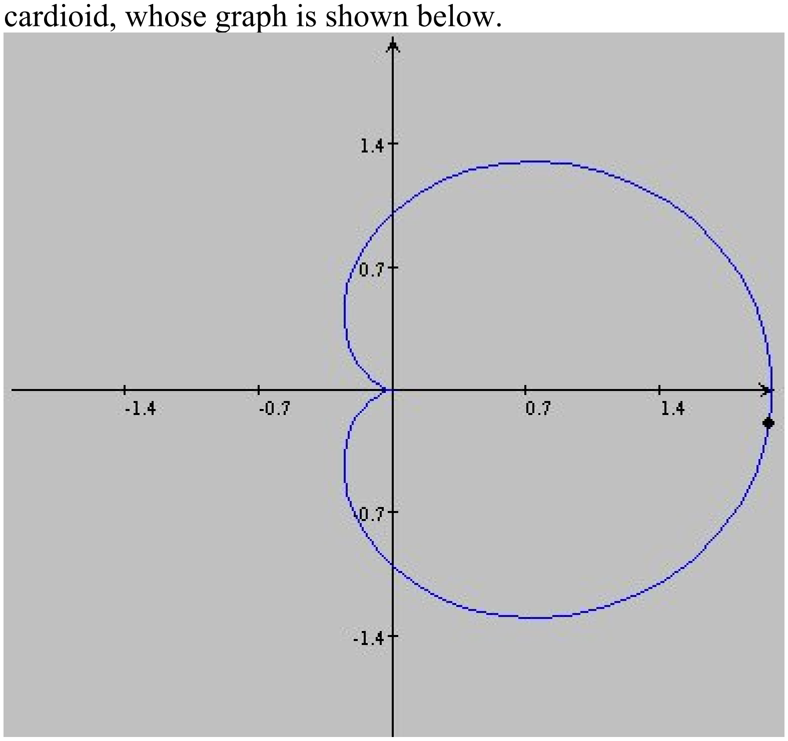
Question 4 (.5 points)

Graph cos(n*t) for various integer values of n. Make a conjecture about the number of "petals" on the "rose."

- a. n petals
- b. n petals if n is even, 2*n petals if n is odd
- c. n petals if n is odd, 2*n petals if n is even
- d. 2*n petals

Question 5 (1 point)

The graph of 1-sin(t) is called a cardioid, because it is heart shaped. Find the polar equation of another cardioid, whose graph is shown below.



- a. 1 - sin(*t*)
- b. 1 + sin(*t*)
- c. 1 - cos(*t*)
- d. 1 + cos(*t*)

Question 6 (.5 points)

The graph is symmetric with respect to the polar axis. What does this say about the algebraic symmetry of the function?

- a. r(t) = r(-t)
- b. r(t) = - r(t)
- c. r(t) = r(Pi/2 - t)
- d. r(t) = r(Pi - t)

Question 7 (.5 points)

A graph is symmetric with respect to the vertical line corresponding to *t* = Pi/2. What does this say about the algebraic symmetry of the function?

- a. r(t) = r(-t)
- b. r(t) = - r(t)
- c. r(t) = r(Pi/2 - t)
- d. r(t) = r(Pi - t)

Question 8 (1 point)

Be a little bit artistic here.

sin(t)*cos(3*t) --> Choose match

sin(t)*cos(2*t) --> Choose match

sin(t)*cos(5*t) --> Choose match

Question 9 (1 point)

Think about what the graph of $r(t) = t$ might look like before you try to graph it. What happens to the graph if you allow negative values of t?

- a. It is a circle, with symmetric values for negative t.
- b. It is a parabola, with symmetric values for negative t.
- c. It is a spiral, opening out in the opposite direction for negative t.
- d. It is a cross between a fish and a spider, and is not defined for negative t.
- e. It is a rose with more and more petals, whether t is positive or negative.

Save answer

Question 10 (1 point)

I wrote the polar grapher using what are called parametric plots, which treat both x and y as depending on t. If you look at the "fine print" at the bottom of the grapher you can see the formulas for how x and y points are being generated. What is the recipe I use?

- a. It is based on the conversion formulas from polar to rectangular coordinates, with r given by the polar function of t that is being plotted.
- b. It is based on the conversion formulas from rectangular to polar coordinates, with x and y computed by the Pythagorean theorem.
- c. It comes from the metric system.
- d. It comes from the reciprocal identities.
- e. It is based on solving quadratic trig equations to determine x and y.

Question 11 (2 points)

The "vertical line test" can be used to decide if the graph of a given cartesian equation in rectangular coordinates x and y represents a function. Explain in a sentence or two why the vertical line test doesn't apply for graphs of polar functions.

Equation Create new equation Equation editor