LAB 09 QUESTIONS

QUESTION 1

Open the polar grapher application. What is the polar graph of sin(t)?

- A circle of radius 1 centered at the origin.
- A circle of radius 1/2 centered at (0,1/2).
- A circle of radius 1/2 centered at (0,-1/2).
- A circle of radius 1/2 centered at (1/2,0).
- A circle of radius 1/2 centered at (-1/2,0).

1 points

QUESTION 2

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

- Pi/4
- Pi/2
- Pi
- 2*Pi
- 4*Pi

1 points

QUESTION 3

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

- n petals
- n petals if n is even, 2*n petals if n is odd
- n petals if n is odd, 2*n petals if n is even
- 2*n petals

1 points

QUESTION 4

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

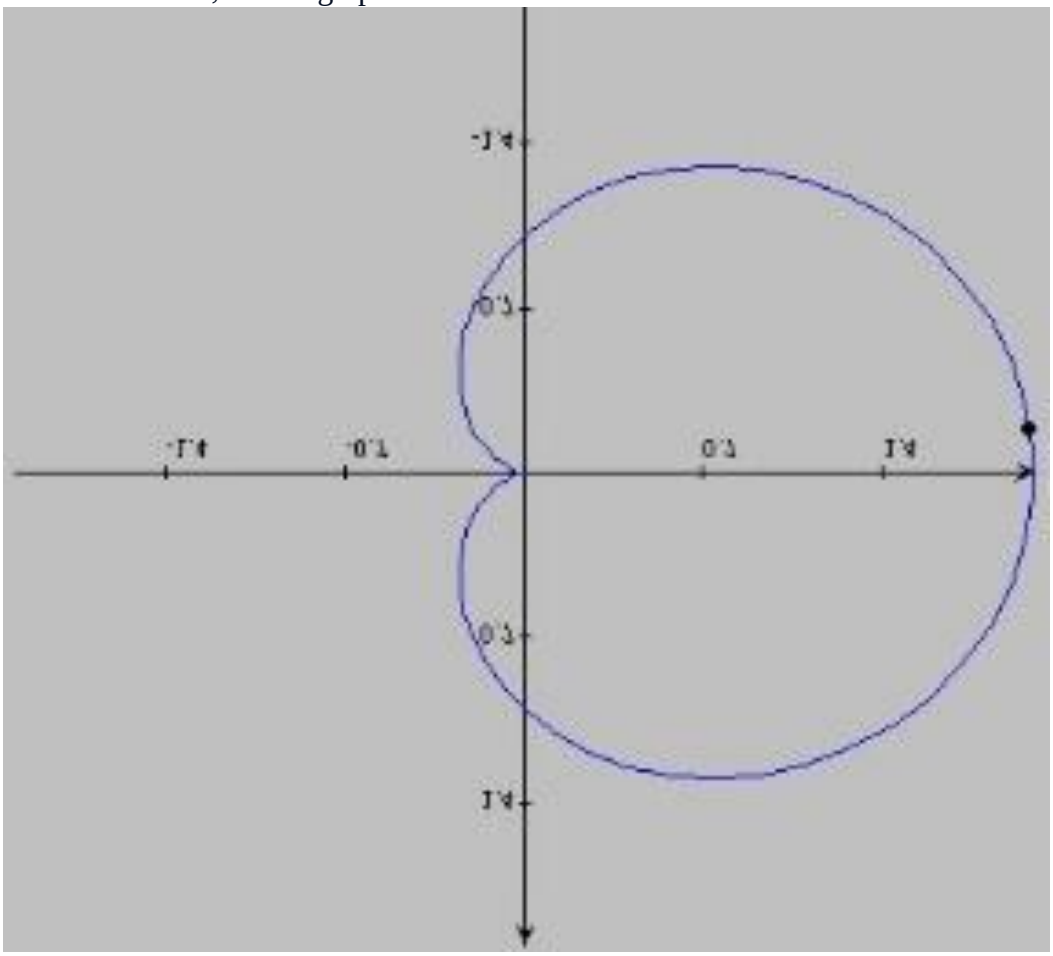
- n petals
- n petals if n is even, 2*n petals if n is odd

- n petals if n is odd, 2*n petals if n is even
- 2*n petals

1 points

QUESTION 5

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.



- 1 - sin(*t*)
- 1 + sin(*t*)
- 1 - cos(*t*)
- 1 + cos(*t*)

1 points

QUESTION 6

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

- r(t) = r(-t)
- r(t) = - r(t)
- r(t) = r(Pi/2 - t)
- r(t) = r(Pi - t)

0.5 points

QUESTION 7

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?

- r(t) = r(-t)
- r(t) = - r(t)
- r(t) = r(Pi/2 - t)
- r(t) = r(Pi - t)

0.5 points

QUESTION 8

Be a little bit artistic here.

[ ] sin(t)*cos(3*t)
[ ] sin(t)*cos(2*t)
[ ] sin(t)*cos(5*t)

A. fish
B. butterfly
C. spider

1 points

QUESTION 9

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?

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

1 points

QUESTION 10

The polar grapher was written 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 that is used?

- 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.
- It is based on the conversion formulas from rectangular to polar coordinates, with x and y computed by the Pythagorean theorem.
- It comes from the metric system.
- It comes from the reciprocal identities.
- It is based on solving quadratic trig equations to determine x and y.

1 points

QUESTION 11

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. What is the equivalent of the vertical line in this test when we interpret the test using polar coordinates?

- A vertical line parallel to theta = Pi/2
- A horizontal line parallel to theta = 0
- a line through the origin corresponding to a constant value of theta
- a circle centered at the orgin corresponding to a constant value of r
- a circle passing through the origin

1 points