Lab 05

Name: WebCT Administrator (Preview)

Start time: October 27, 2003 11:47am | Number of questions: 11

Finish Help

This set of questions goes with the pages of applets and activities for Lab 05. Use the applets and activities there to answer the questions.

Question 1 (.5 points)

Refer to lab page 1. What is the circumference of the circle on the left?

- a. 1
- b. 2
- c. $\pi / 2$
- d. π
- e. 2π

Save answer

Question 2 (.5 points)

Refer to lab page 2. Interpreting geometric quantities in this sketch numerically, describe how would you compute the value of the sine function for a given position of X.

- a. Divide the length of the time axis by the radius of the yellow circle.
- b. Multiply the height of the red line by the radius of the yellow circle.
- c. Multiply the length of the time axis by the radius of the yellow circle.
- d. Divide the height of the red line by the radius of the yellow circle.
- e. Divide the radius of the yellow circle by the height of the red line.

Save answer

Question 3 (1 point)

Refer to lab page 2. Change the radius of the yellow circle while X is rotating. How does the speed of X change as the radius decreases?

- a. The angular speed increases and the linear speed increases.
- b. The angular speed stays the same and the linear speed increases.
- c. The angular speed increases and the linear speed stays the same.
- d. The angular speed and the linear speed stay the same.

Save answer

Question 4 (1 point)

Refer to lab page 2. Change the radius of the yellow circle, and set X rotating and time progressing. How does the shape of the sinusoidal curve change when the radius of the yellow circle gets smaller?

- a. The amplitude decreases and the period decreases.
- b. The amplitude decreases and the period stays the same.
- c. The amplitude decreases and the period increases.
- d. The amplitude stays the same and the period decreases.
- e. The amplitude stays the same and the period stays the same.
- f. The amplitude stays the same and the period increases.
- g. The amplitude increases and the period decreases.
- h. The amplitude increases and the period stays the same.
- i. The amplitude increases and the period increases.

Save answer

Question 5 (1 point)

Refer to lab page 2. Notice, when time reaches the end of its axis, that it starts a new sine wave in a different place than the sine wave it just finished plotting. Put the yellow circle back to its original radius (use the reset button in the menu bar). Change the length of the time axis by dragging the right hand end point so that it only produces one sine wave, no matter how long the points kept moving. You probably won't be able to get it just right, but you should be able to come close. What length works, to the nearest unit? Write down the time axis length and the circle radius for this problem--you will need them later.

- a. 221
- b. 228
- c. 235
- d. 242

- e. 249

Save answer

Question 6 (1 point)

Refer to lab page 2. Reset the picture to its original dimensions, and this time change the radius of the yellow circle so that it only produces one sine wave, no matter how long the points keep moving. What radius works, to the nearest unit?

- a. 46
- b. 51
- c. 56
- d. 61
- e. 66
- f. 71

Save answer

Question 7 (1 point)

Refer to lab page 2. What do you notice about the ratio of the length of the time axis to the circle radius in questions 5 and 6?

- a. They are the same--about $\sqrt{5}$
- b. They are the same--about π
- c. They are the same--about $\sqrt{2}$ $\sqrt{3}$
- d. They are the same--about 2 π
- e. They are the same--about 8.5

Save answer

Question 8 (.5 points)

Refer to lab page 2. What happens to the sinusoidal curve when you set the time axis to be half the circumference of the yellow circle? (Start X at the top of the circle.)

- a. It makes a figure in the shape of an o
- b. It makes a figure in the shape of a z
- c. It makes a figure in the shape of an h
- d. It makes a figure in the shape of an x
- e. It makes a figure in the shape of a w

Save answer

Question 9 (.5 points)

Refer to lab page 2. What happens when you set the time axis to be double the circumference of the yellow circle?

- a. There is time for one period on the time axis.
- b. There is time for two periods on the time axis.
- c. The curve is shaped like the letter o.
- d. The curve is shaped like the letter n.
- e. The curve is shaped like the letter x.

Save answer

Question 10 (1 point)

Refer to lab page 3. What happens to the sinusoidal curve in the second figure when the radius of the green circle decreases? (To change the radius you have to Show the hidden parts of the construction. The radius is controlled by a red dot hidden at the bottom of the circle, at about 270^{o}.)

- a. The amplitude decreases and the period decreases.
- b. The amplitude decreases and the period stays the same.
- c. The amplitude decreases and the period increases.
- d. The amplitude stays the same and the period decreases.
- e. The amplitude stays the same and the period stays the same.
- f. The amplitude stays the same and the period increases.
- g. The amplitude increases and the period decreases.
- h. The amplitude increases and the period stays the same.
- i. The amplitude increases and the period increases.

Save answer

Question 11 (2 points)

Refer to lab page 3. Describe in a sentence how to drag certain points of the figure so that the curve tracks values of the cosine function (the horizontal component of a point on the circle) rather than the sine function (the vertical component of a point on the circle).

Equation Create new equation Equation editor

Save answer

Finish Help