

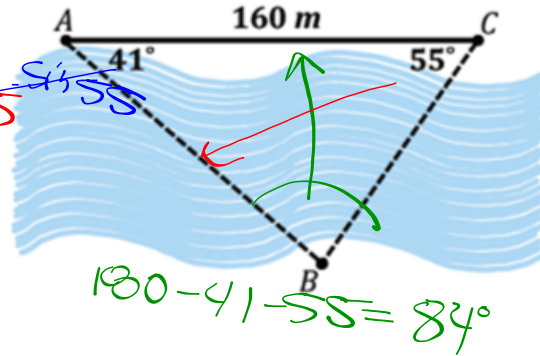
Quiz 3

Name _____

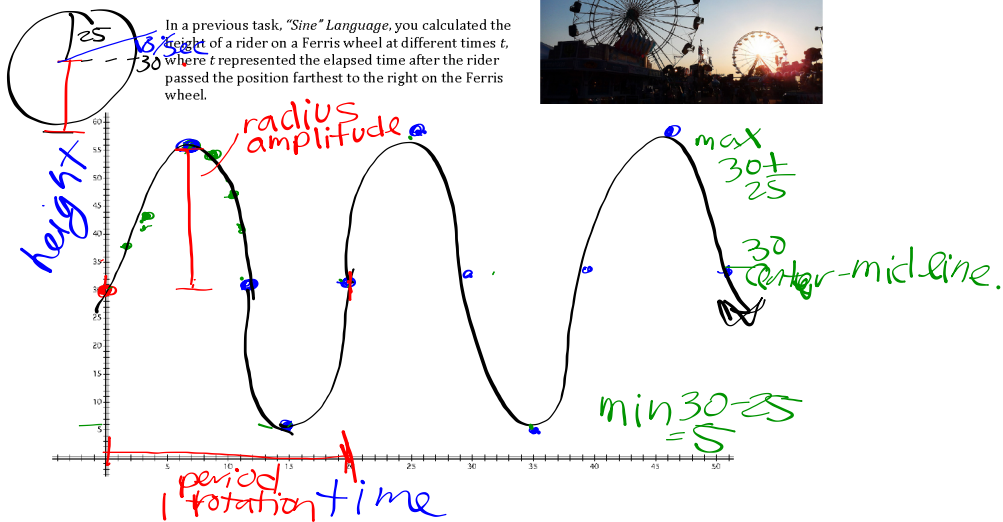
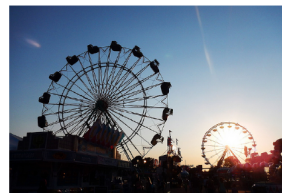
1. $\sin(5\pi) = \frac{1}{2}$

$\sin 55 = \frac{160}{\sin 84} = \frac{160}{\sin 55}$ (crossed out)
 $132 \text{ meter} = \text{X}$
 131.7 m

2. distance across a to b?



6.4 More Ferris Wheels
 A Solidify Understanding Task

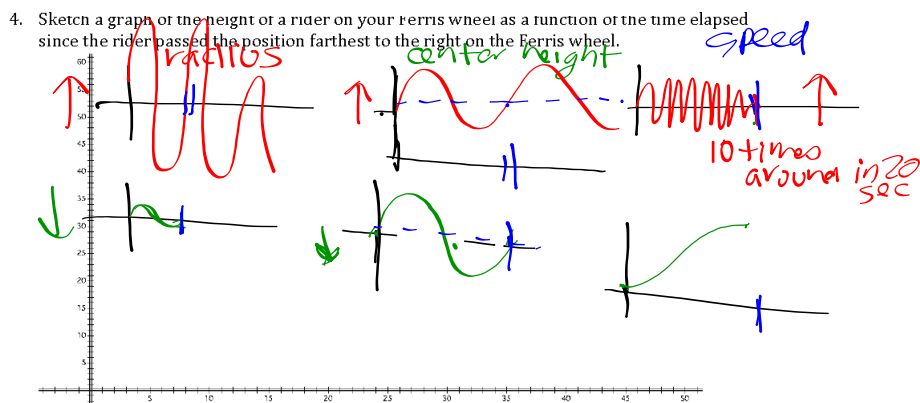


2. Write the equation of the graph you sketched in question 1.

height(time)
 $h(t) = 25 \sin(18t) + 30$
 radius speed $360/20 = 18$ center height mid line.

3. Of course, Ferris wheels do not all have this same radius, center height, or time of rotation. Describe a different Ferris wheel by changing some of the facts listed above. For example, you can change the radius of the wheel, or the height of the center, or the amount of time it takes to complete one rotation. You can even change the direction of rotation from counterclockwise to clockwise. If you want, you can change more than one fact. Just make sure your description seems reasonable for the motion of a Ferris wheel.

Description of my Ferris wheel:



5. Write the equation of the graph you sketched in question 4.

$$h(t) = a \sin(bt) + d$$

↑ radius
↑ speed
↑ midline.

6. We began this task by considering the graph of the height of a rider on a Ferris wheel with a radius of 25 feet and center 30 feet off the ground, which makes one revolution counterclockwise every 20 seconds. How would your graph change if:

- ★ • the radius of the wheel was larger or smaller? changes wave height, y-values
AMPLITUDE
- the height of the center of the wheel was greater or smaller? shifts the whole up or down.
- the wheel rotates faster or slower? the graph compressed/stretched
frequency. period

7. How does the equation of the rider's height change if:

- the radius of the wheel is larger or smaller?
- the height of the center of the wheel is greater or smaller?
- the wheel rotates faster or slower?

8. Write the equation of the height of a rider on each of the following Ferris wheels t seconds after the rider passes the farthest right position.

a. The radius of the wheel is 30 feet, the center of the wheel is 45 feet above the ground, and the angular speed of the wheel is 15 degrees per second counterclockwise.

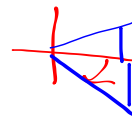
$$h(t) = 30 \sin(15t) + 45$$

b. The radius of the wheel is 50 feet, the center of the wheel is at ground level (you spend half of your time below ground), and the wheel makes one revolution clockwise every 15 seconds.

★ $\sin(-\theta) = -\sin \theta$

$$h(t) = 50 \sin(-24t) + 0$$

$360/15$

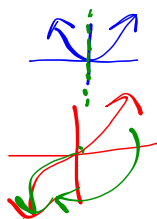
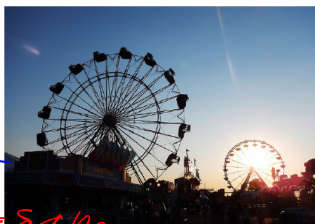


Ready, Set, Go!

Ready

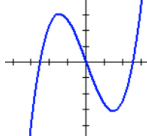
Topic: Even and odd functions

The *graphs* of even and odd functions make it easy to identify the type of function. Remember that an even function has a line of symmetry along the y-axis, while an odd function has 180° rotational symmetry.

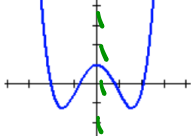


Label the following functions as even, odd, or neither.

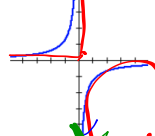
1. odd



2. even

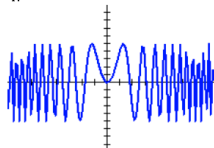


3. odd

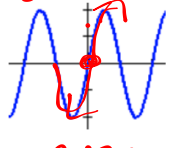


$\frac{1}{x}$
odd

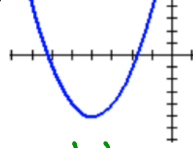
4.



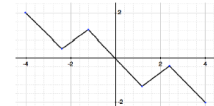
5. odd



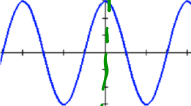
6.



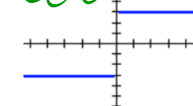
7.



8. even



9. odd



Set Topic: Transformations on functions

Describe the transformation on the parabola in the following equations.

10. $y = x^2 + 5$

11. $y = x^2 - 1$

12. $y = -x^2$

13. $y = 4x^2$

Match the equation with the correct graph. The scale of the x-axis is 90°. The scale of the y-axis is 1.

a. $y = \sin 2x$

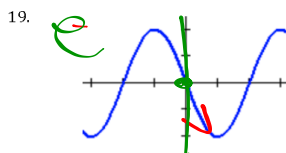
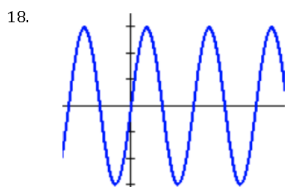
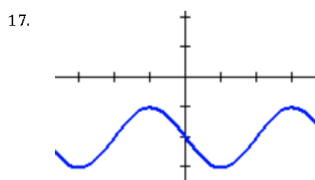
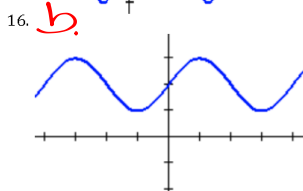
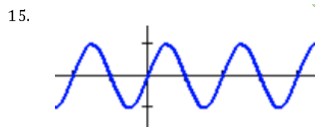
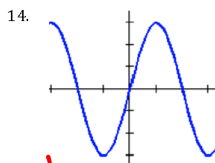
~~b.~~ $y = (\sin x) + 2$ shifted up 2

c. $y = 3 \sin x$

d. $y = -(\sin x) - 2$

~~e.~~ $y = -2 \sin x$

f. $y = 3 \sin 2x$



Go

Topic: Positive and negative angles of rotation

A *positive angle of rotation is counter-clockwise*. Let's find out why. In the following examples, indicate whether the customary direction of rotation is **counter-clockwise** by placing a (+) sign next to it or **clockwise** by placing a (-) sign next to it.

20. _____ Sprinters racing around a track
21. _____ The direction you turn the pages as you read a book
22. _____ A car in America going around a roundabout
23. _____ A pulley being used to lift an engine out of a car
24. _____ Turning a water faucet on
25. _____ A car in Australia circling in a roundabout (See sign.)
26. _____ The rotation of the earth around the sun
27. _____ The rotation of the moon around the earth. (See diagram)



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