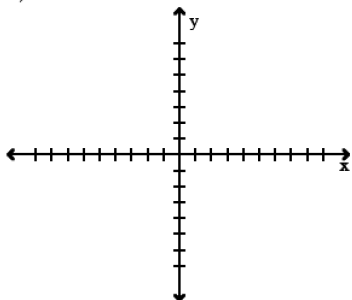


## Test Review Unit 5 Trig

1. Find the angle of least positive measure coterminal with  $500^\circ$

2. Sketch an angle  $\theta$  in standard position such that  $\theta$  has the least positive measure and the given point is on the terminal side of  $\theta$

$(-2, 5)$



Identify the quadrant for the angle  $\theta$  satisfying the following conditions.

3.  $\sin < 0$  and  $\cos > 0$

4.  $\tan > 0$  and  $\cos < 0$

5.  $\tan < 0$  and  $\sin > 0$

6.  $\sin > 0$  and  $\cos > 0$

7. Find the equation of a line passing through the origin so that the cosine of the angle between the line in quadrant I and the positive x-axis is  $\frac{1}{2}$

Convert the degree measure to radians. Leave answer as a multiple of  $\pi$ .

8.  $540^\circ$

9.  $330^\circ$

10.  $60^\circ$

Convert the radian measure to degrees. You may round to the nearest tenth when necessary.

11.  $3\pi/5$

12.  $\pi/8$

13. 3

14. A small pebble is lodged in the tread of a tire with radius 25 cm. Sketch the height of the pebble above the ground as the tire rotates counterclockwise through 5 turns. Start your graph when the pebble is at the 9 o'clock position.



15. The Seattle Great Wheel, with an overall height of 175 feet, was the tallest Ferris wheel on the west coast at the time of its construction in 2012. For this exercise, assume that the diameter of the wheel is 150 feet and that the starting car, when at the bottom, is 25 feet off the ground. Write a cosine function in the form  $y = a \cos b(x) + c$  that models a person's height from getting on at the bottom and making a complete circle that will take them 5 minutes.

**Using the Pythagorean Identity  $\sin^2 + \cos^2 = 1$  evaluate the following:**

16. Suppose  $0 < \theta < 90$  and  $\sin(\theta) = \frac{1}{\sqrt{3}}$ . What is the value of  $\cos(\theta)$ ?

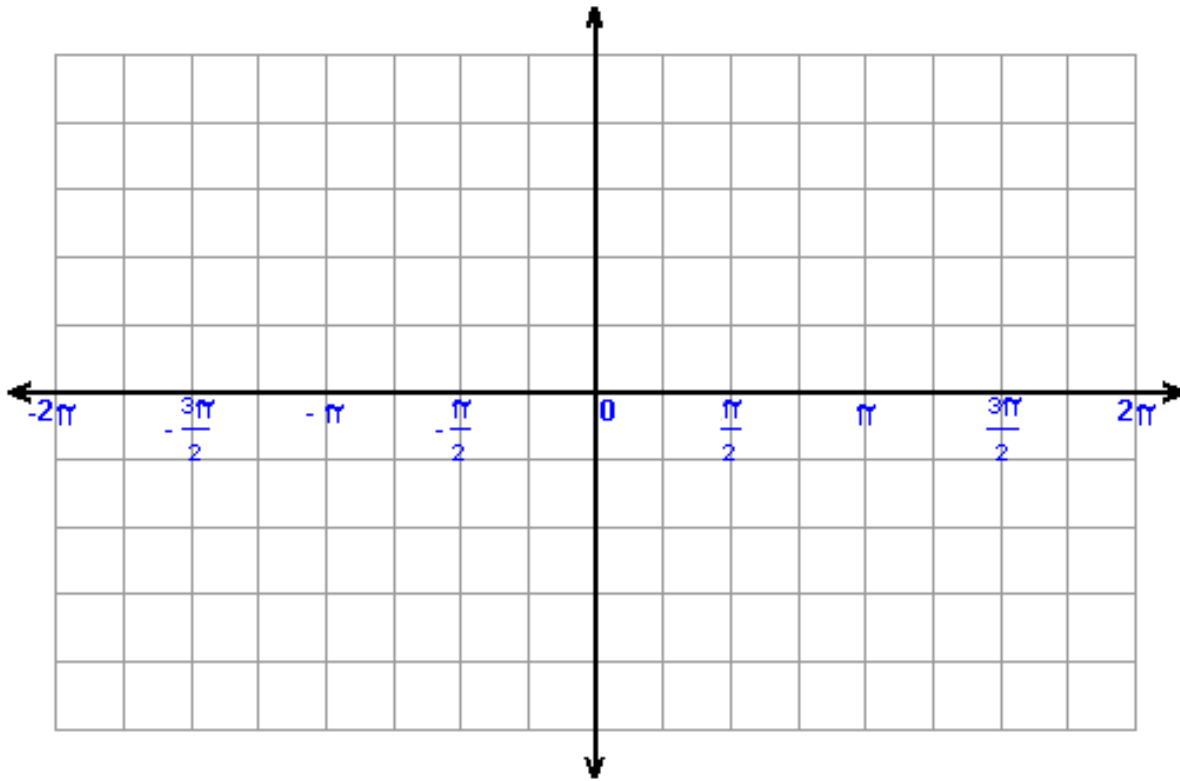
17. Suppose  $180 < \theta < 270$  and  $\cos(\theta) = \frac{-1}{\sqrt{5}}$ . What is the value of  $\sin(\theta)$ ?

18. Suppose the  $\cos \theta = \frac{-2}{3}$  then what are the possible values of the  $\sin \theta$ ?

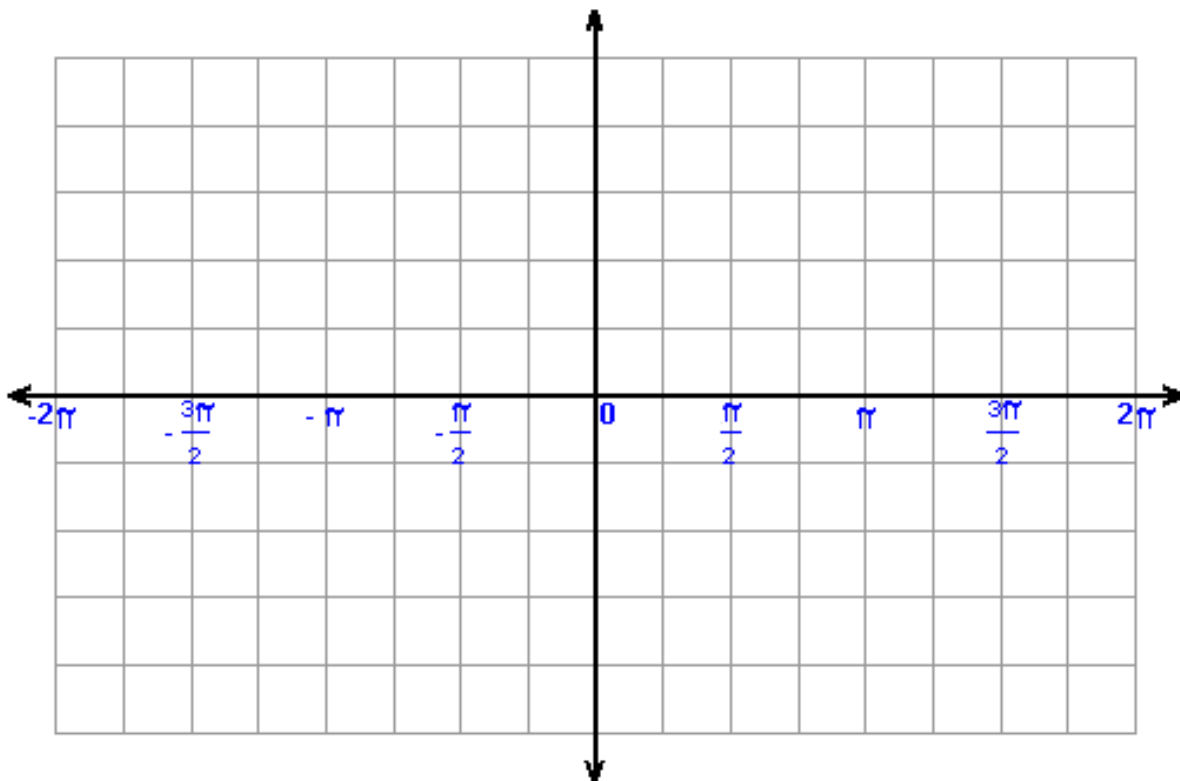
19. The terminal ray of angle drawn in standard position passes through the point  $(-0.60, 0.80)$  which lies on the unit circle, then find the sine, cosine, and tangent values of the angle.

20. Given the point  $A ( 8, -15)$  on the terminal side of  $\theta$  in standard position, find the sine, cosine, and tangent value of the angle formed.

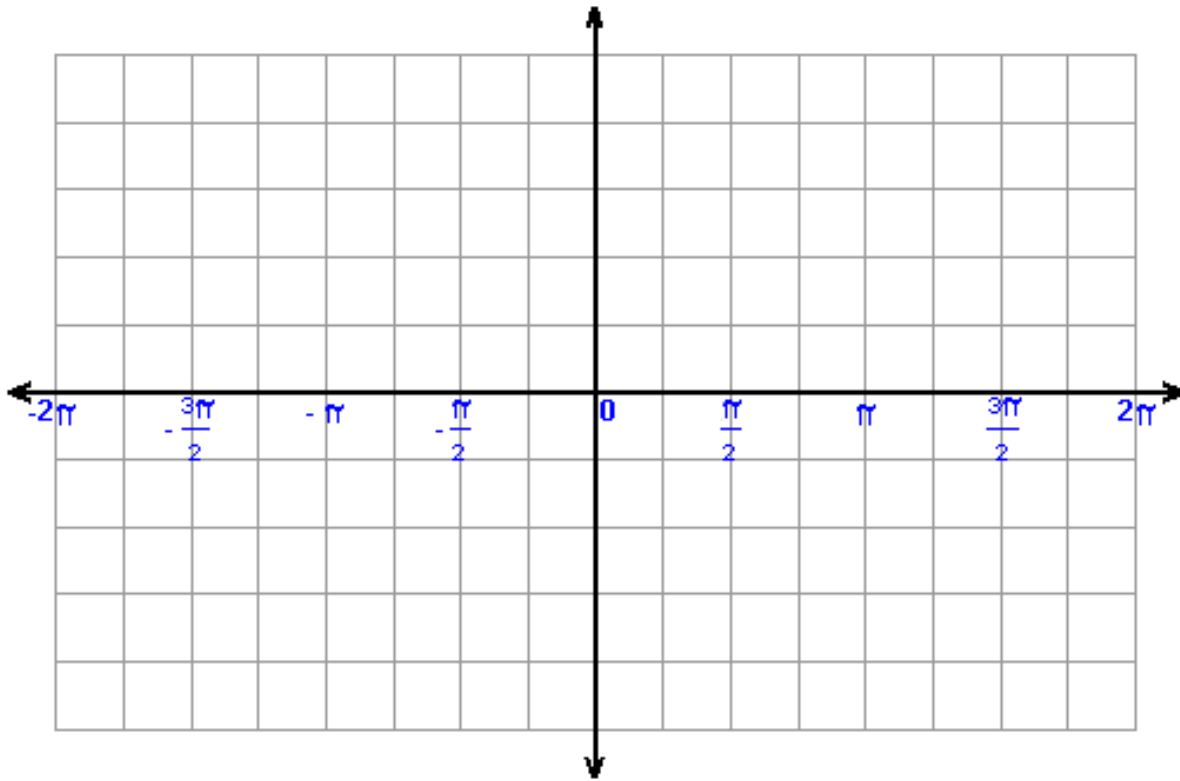
21. Graph:  $y = 3 \sin(\frac{1}{2} x)$  for one complete cycle.



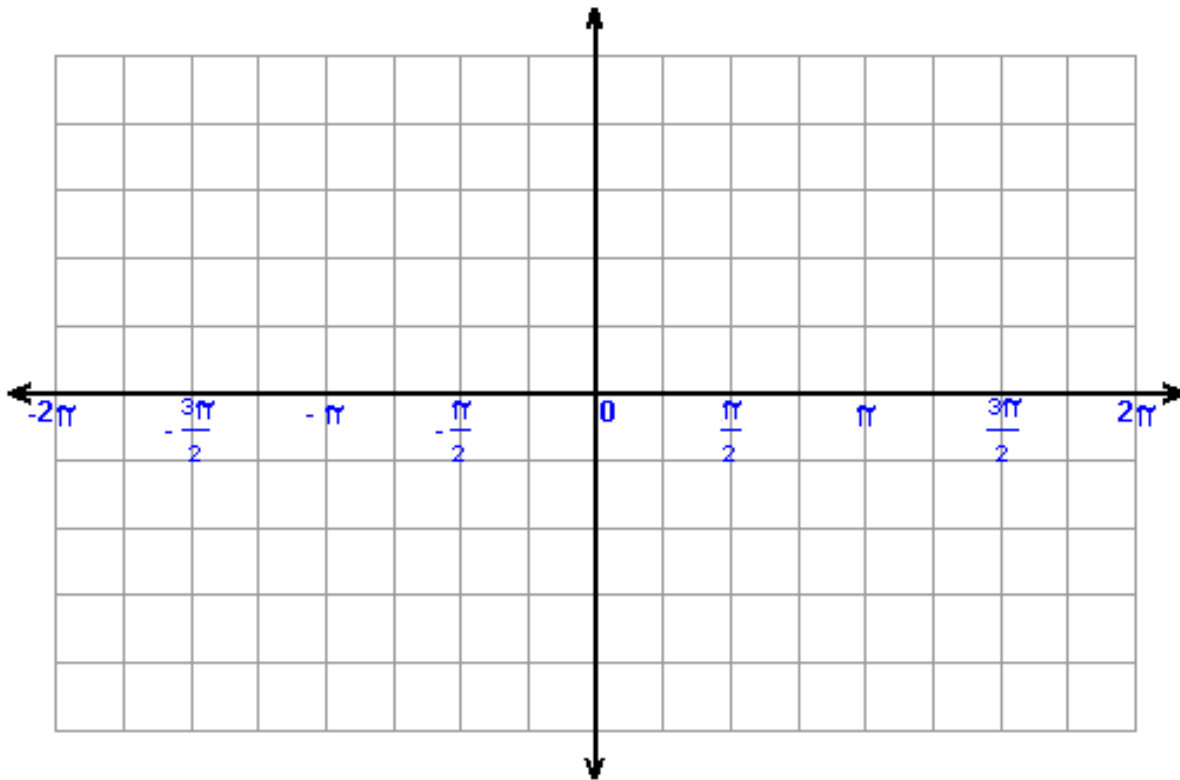
22. Graph:  $y = -2 \sin(x)$  for one complete cycle.



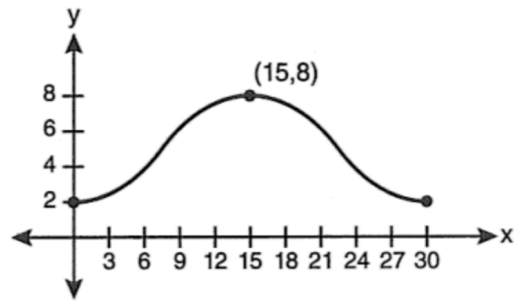
23. Graph:  $y = 2\cos(3x) + 2$  for one complete cycle.



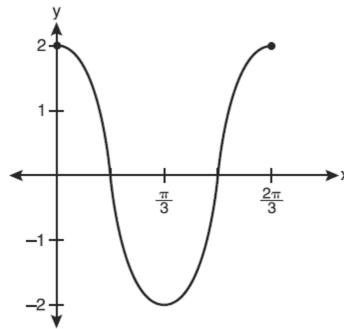
24. Graph:  $y = -2\cos \frac{1}{2}(x) - 3$  for one complete cycle.



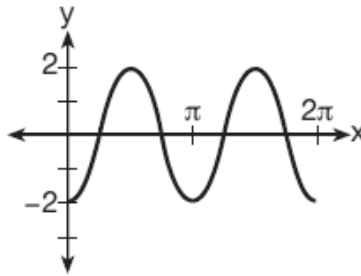
25. Write the equation of the graph below:



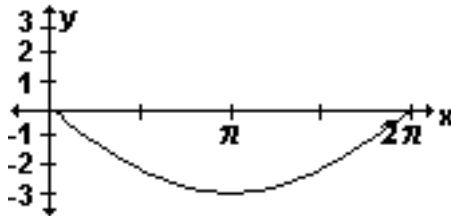
26. Write the equation of the graph below:



27. Write the equation of the graph below:



28. Write the equation of the graph below:



For each of the following sinusoidal functions determine its period in exact terms of  $\pi$  and state its range.

19.  $y = -6 \sin(5x) + 8$

20.  $y = \frac{2}{3} \cos\left(\frac{4}{3}x\right) + \frac{2}{5}$

21.  $y = 5 \sin\left(\frac{2\pi}{9}x\right) - 1$

22.  $y = -7 \cos\left(\frac{2}{5}x\right) - 9$

23. The paddle wheel of the S.S. Beaver was 13 feet in diameter and revolved 30 times per minute when moving at top speed. Using this speed and starting from a point at the very top of the wheel, write a model for the height  $h$  (in feet) of the end of a paddle relative to the water's surface as a function of the time  $t$  (in ~~minutes~~). (Assume the paddle is 2 feet below the water's surface at its lowest point.)

in seconds

24. The height of the water in a bay varies sinusoidal over time. On a certain day off the coast of Maine, a high tide of 10 feet occurred at midnight and a low tide of 2 feet occurred at 8:00 A.M. Write a model for the height  $h$  (in feet) of the water as a function of time  $t$  (in hours since midnight).