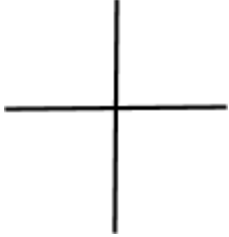


**Angles in Degrees**

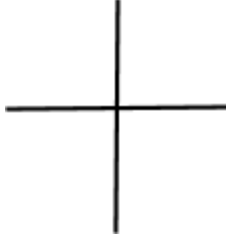
Sketch each angle in standard position. State the quadrant in which it terminates.

1.  $150^\circ$



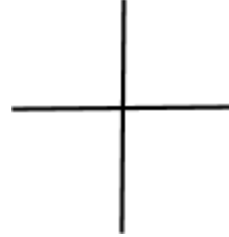
Quadrant: \_\_\_\_\_

2.  $-340^\circ$



Quadrant: \_\_\_\_\_

3.  $560^\circ$



Quadrant: \_\_\_\_\_

Find the coterminal angle between  $0^\circ$  and  $360^\circ$ .

4.  $750^\circ$

5.  $-270^\circ$

6.  $405^\circ$

**Angles in Radians**

Convert each angle into radians.

7.  $230^\circ$

8.  $-400^\circ$

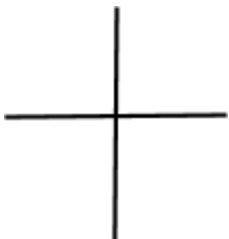
Convert each angle into degrees.

9.  $\frac{8\pi}{3}$

10.  $-\frac{\pi}{4}$

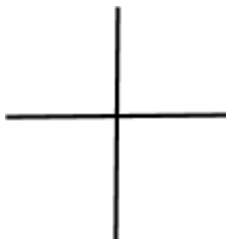
Sketch each angle in standard position. State the quadrant in which it terminates.

11.  $\frac{11\pi}{6}$



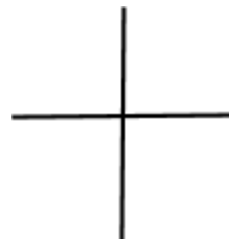
Quadrant: \_\_\_\_\_

12.  $\pi$



Quadrant: \_\_\_\_\_

13.  $-\frac{5\pi}{4}$

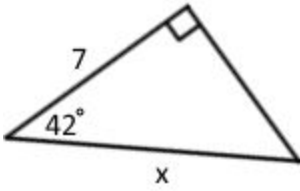


Quadrant: \_\_\_\_\_

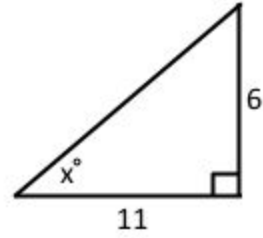
**Right Triangle Trig**

Find the value of  $x$  using trigonometric ratios.

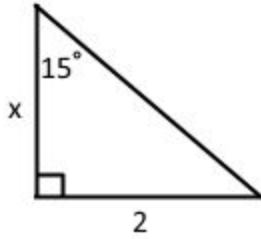
14.



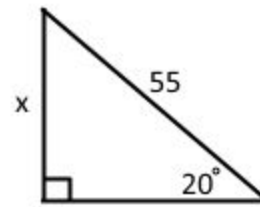
15.



16.



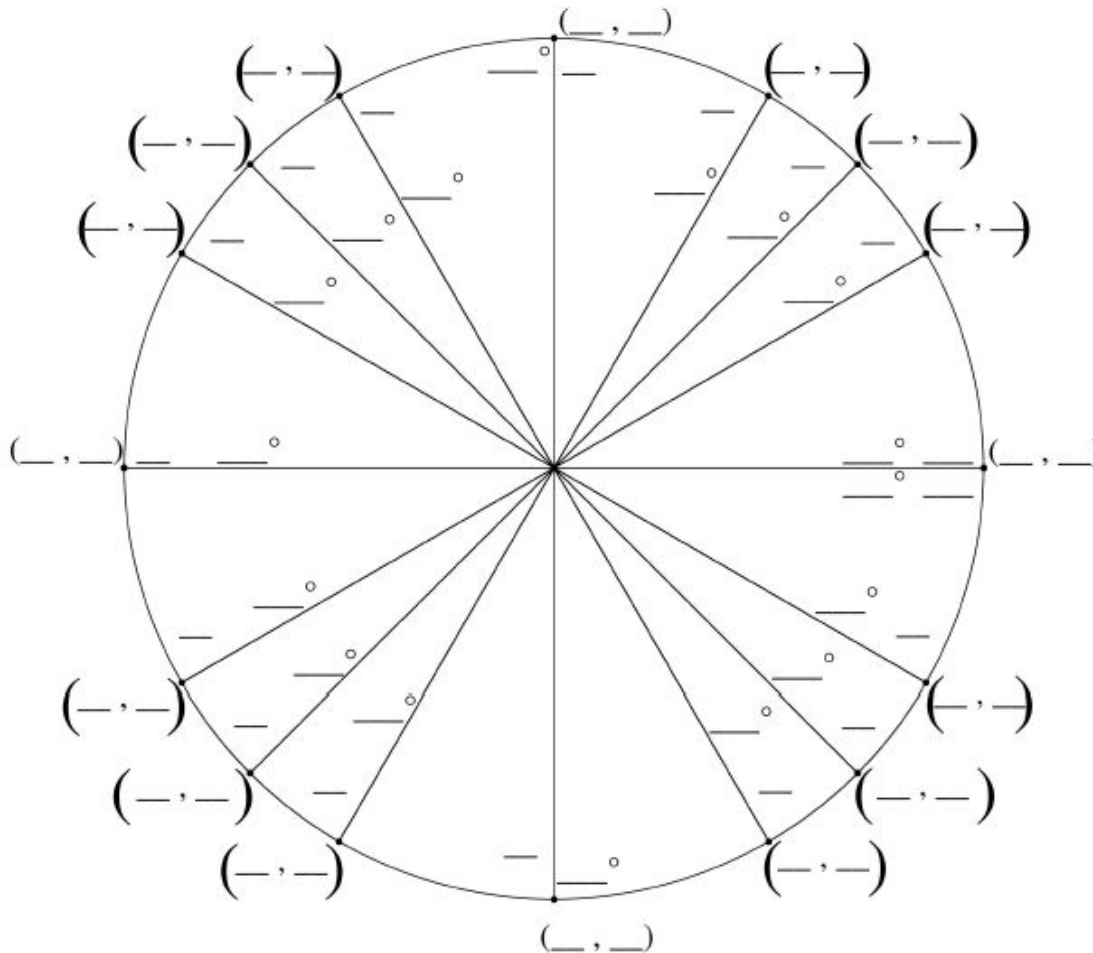
17.



18. To find the height of the Times Square New Year's Eve Ball, a partygoer moves 140 feet away from the base of the pole and estimates the angle of elevation to the NYE Ball to be about  $44^\circ$ . About how high is the ball?

## Exact Values of Trig Functions

Complete the unit circle.



Determine the exact value of each trig function by using the unit circle.

19.  $\sin 180^\circ =$

20.  $\cos \frac{4\pi}{3} =$

21.  $\cot 60^\circ =$

22.  $\sec -45^\circ$

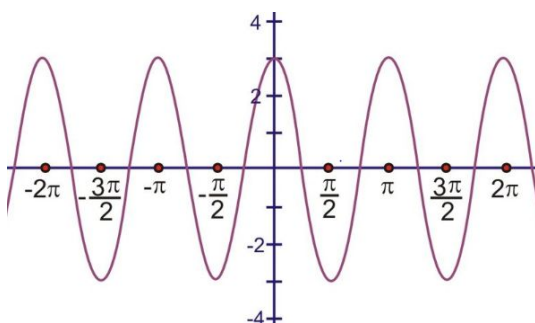
23.  $\csc \frac{19\pi}{6} =$

24.  $\tan \frac{\pi}{2} =$

## Graphs and Equations of Sine and Cosine

For each graph, determine the amplitude, period, frequency, and vertical shift. Then write the equation.

25.

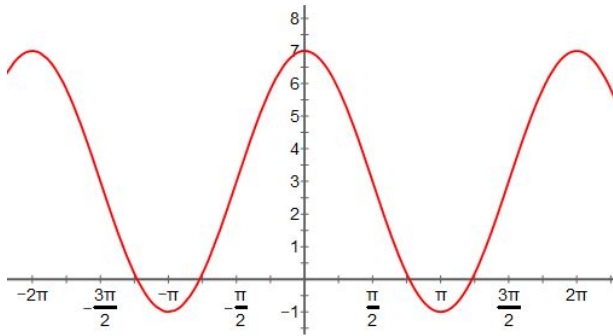


Amplitude: \_\_\_\_\_ Period: \_\_\_\_\_

Frequency: \_\_\_\_\_ Vertical Shift: \_\_\_\_\_

Equation: \_\_\_\_\_

26.



Amplitude: \_\_\_\_\_ Period: \_\_\_\_\_

Frequency: \_\_\_\_\_ Vertical Shift: \_\_\_\_\_

Equation: \_\_\_\_\_

27.  $y = -2\cos\left(\frac{1}{3}x\right) - 7$

Amplitude: \_\_\_\_\_ Period: \_\_\_\_\_

Frequency: \_\_\_\_\_ Vertical Shift: \_\_\_\_\_

28.  $y = 4\sin(-4x) + 2$

Amplitude: \_\_\_\_\_ Period: \_\_\_\_\_

Frequency: \_\_\_\_\_ Vertical Shift: \_\_\_\_\_

### **Applications of Trig Function**

29. An elk population fluctuates periodically over time. The average population is 300 antelopes. Every 5 years the population reaches a maximum of 350 elk. Write a cosine function to model the elk population over time, where  $x$  represents time in years.

30. Each day, the tide continuously goes in and out, raising and lowering a boat in the harbor. At low tide, the boat is only 2 feet above the ocean floor. And, 6 hours later, at peak high tide, the boat is 40 feet above the ocean floor. Write a sine function that describes the boat's distance above the ocean floor as it relates to time, where  $x$  represents time in hours.