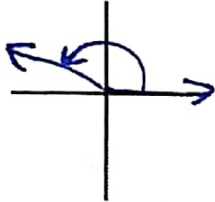


Angles In Degrees

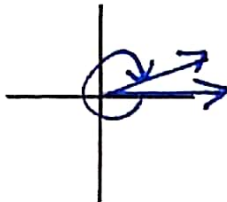
Sketch each angle in standard position. State the quadrant in which it terminates.

1. 150°



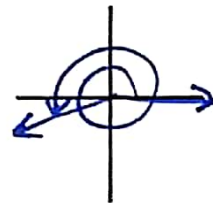
Quadrant: QII

2. -340°



Quadrant: QI

3. 560°



Quadrant: QIII

Find the coterminal angle between 0° and 360° .

4. 750° 30°

5. -270° 90°

6. 405° 45°

Angles in Radians

Convert each angle into radians.

7. 230° $\frac{23\pi}{18}$

8. -400° $-\frac{20\pi}{9}$

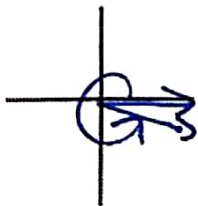
Convert each angle into degrees.

9. $\frac{8\pi}{3}$ 480°

10. $-\frac{\pi}{4}$ -45°

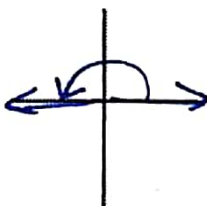
Sketch each angle in standard position. State the quadrant in which it terminates.

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



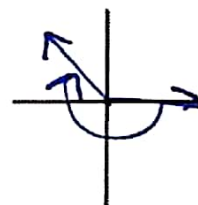
Quadrant: QIV

12. π



Quadrant: negative x-axis

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

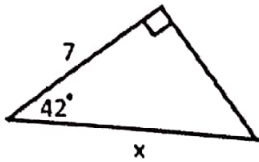


Quadrant: QII

Right Triangle Trig

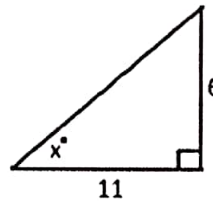
Find the value of x using trigonometric ratios.

14.



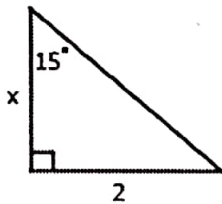
$$x = 9.42$$

15.



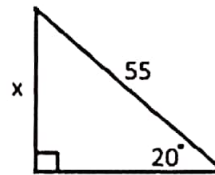
$$x = 28.61^\circ$$

16.



$$x = 7.46$$

17.



$$x = 18.81$$

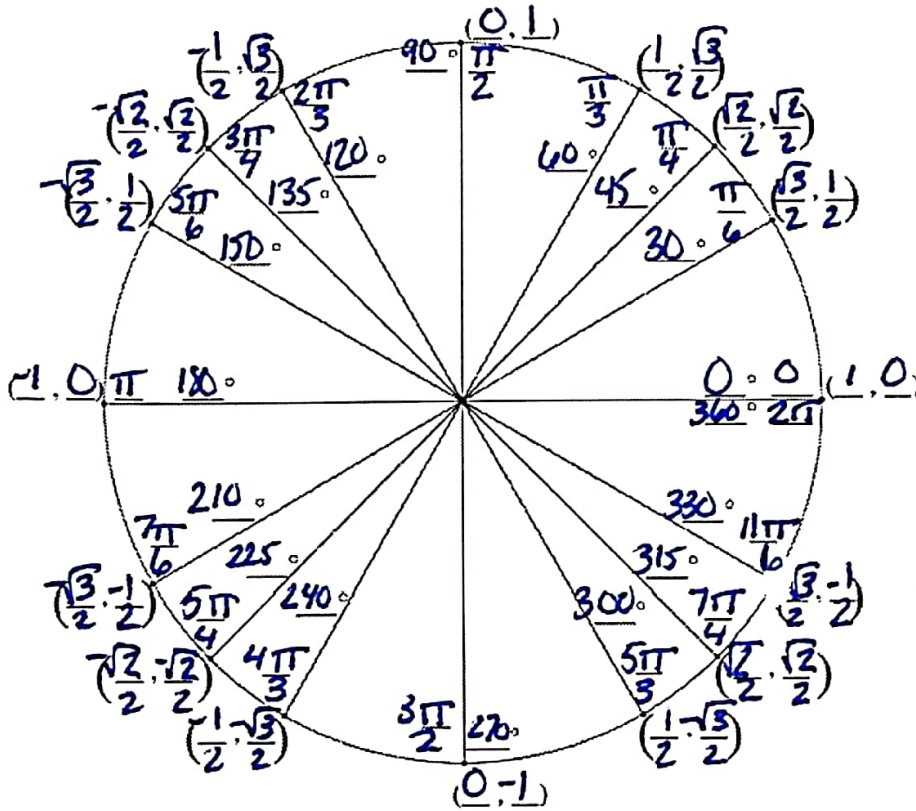
18. To find the height of the Times Square New Year's Eve Ball, a partygoer moves 140 feet away from the base of the pole and estimates the angle of elevation to the NYE Ball to be about 44° . About how high is the ball?

$$135.20 \text{ ft}$$

Exact Values of Trig Functions

Complete the unit circle.

← Yes you have to fill this in

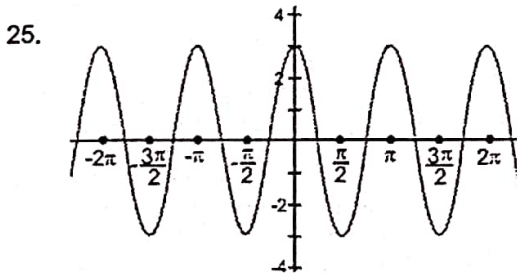


Determine the exact value of each trig function by using the unit circle.

19. $\sin 180^\circ = 0$ 20. $\cos \frac{4\pi}{3} = -\frac{1}{2}$ 21. $\cot 60^\circ = \frac{1}{\sqrt{3}}$
22. $\sec -45^\circ = \frac{2}{\sqrt{2}}$ 23. $\csc \frac{19\pi}{6} = -2$ 24. $\tan \frac{\pi}{2} = \text{undefined}$

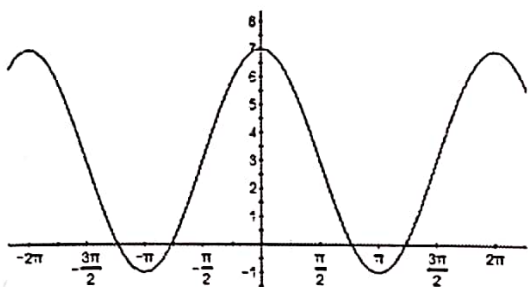
Graphs and Equations of Sine and Cosine

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



Amplitude: 3 Period: π
 Frequency: $\frac{1}{\pi}$ Vertical Shift: none
 Equation: Cosine

26.



Amplitude: 4 Period: 2π
 Frequency: $\frac{1}{2\pi}$ Vertical Shift: up 3
 Equation: cosine

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

Amplitude: 2 Period: 6π
 Frequency: $\frac{1}{6\pi}$ Vertical Shift: down 7

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

Amplitude: 4 Period: $\frac{\pi}{2}$
 Frequency: $-\frac{2}{\pi}$ Vertical Shift: up 2

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.