Trigonometric Functions

Angle Measures, Sines, Cosines, and Tangents

Convert the angle from degrees to radians. Express the answer as a multiple of π.

1) -90°

2) 252°

3) -450°

4) 1440°

Convert the angle from radians to degrees.

5) $-\frac{11\pi}{4}$

6) $\frac{10\pi}{9}$

7) $-\frac{\pi}{2}$

8) $\frac{35\pi}{9}$

Find the length of the arc on the circle of radius *r* meters intercepted by a central angle θ. Round your answer to three decimal places.

9) r = 2, θ = 50°

10) r = 10, θ = $\frac{\pi}{6}$

11) A car wheel has a 14-inch radius. Through what angle (to the nearest tenth of a degree) does the wheel turn when the car rolls forward 1 ft?

12) A pendulum swings through an angle of 45° each second. If the pendulum is 60 inches long, how far does its tip move each second?

Use the information given to find the quadrant in which θ lies.

13) $\tan \theta > 0$ and $\sin \theta < 0$

14) $\sin \theta > 0$ and $\cos \theta < 0$

15) $\tan \theta < 0$ and $\sin \theta < 0$

Evaluate the trigonometric function.

16) $\tan 270°$

17) $\sin -1170°$

18) $\cos \frac{25\pi}{2}$

19) $\sin -7\pi$

20) From a boat on the lake, the angle of elevation to the top of a cliff is 32°39'. If the base of the cliff is 770 feet below the boat, how high is the cliff (to the nearest foot)?

21) A 32-foot ladder is leaning against the side of a building. If the ladder makes an angle of 24°36' with the side of the building, how far is the bottom of the ladder from the base of the building?