

Name _____

Draw the angle.

1) 135°

1) _____

Objective: (6.1) Convert between Decimals and Degrees, Minutes, Seconds Measures for Angles

2) $-\frac{3\pi}{4}$

2) _____

Objective: (6.1) Convert between Decimals and Degrees, Minutes, Seconds Measures for Angles

3) $-\frac{7\pi}{6}$

3) _____

Objective: (6.1) Convert between Decimals and Degrees, Minutes, Seconds Measures for Angles

4) $\frac{5\pi}{3}$

4) _____

Objective: (6.1) Convert between Decimals and Degrees, Minutes, Seconds Measures for Angles

If s denotes the length of the arc of a circle of radius r subtended by a central angle θ , find the missing quantity.

5) $r = 19.99$ centimeters, $\theta = 6.2$ radians, $s = ?$

5) _____

Objective: (6.1) Find the Length of an Arc of a Circle

6) $r = 13.8$ inches, $\theta = 45^\circ$, $s = ?$

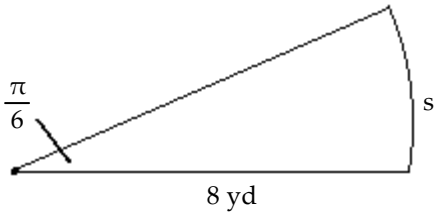
6) _____

Objective: (6.1) Find the Length of an Arc of a Circle

Find the length s . Round the answer to three decimal places.

7)

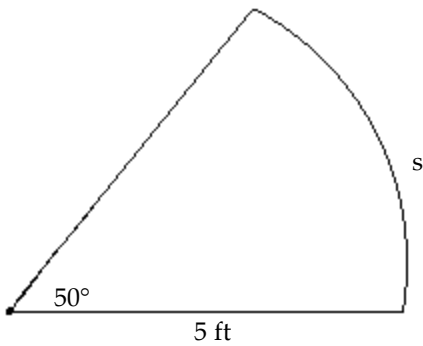
7) _____



Objective: (6.1) Find the Length of an Arc of a Circle

8)

8) _____



Objective: (6.1) Find the Length of an Arc of a Circle

Solve the problem.

9) For a circle of radius 4 feet, find the arc length s subtended by a central angle of 30° . Round to the nearest hundredth.

9) _____

Objective: (6.1) Find the Length of an Arc of a Circle

10) A pendulum swings through an angle of 55° each second. If the pendulum is 60 inches long, how far does its tip move each second? If necessary, round the answer to two decimal places.

10) _____

Objective: (6.1) Find the Length of an Arc of a Circle

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

11) 144°

11) _____

Objective: (6.1) Convert from Degrees to Radians and from Radians to Degrees

12) -480°

12) _____

Objective: (6.1) Convert from Degrees to Radians and from Radians to Degrees

Convert the angle in radians to degrees.

13) $\frac{12\pi}{5}$

13) _____

Objective: (6.1) Convert from Degrees to Radians and from Radians to Degrees

14) $-\frac{11\pi}{6}$

14) _____

Objective: (6.1) Convert from Degrees to Radians and from Radians to Degrees

Convert the angle in degrees to radians. Express the answer in decimal form, rounded to two decimal places.

15) 12°

15) _____

Objective: (6.1) Convert from Degrees to Radians and from Radians to Degrees

16) -358°

16) _____

Objective: (6.1) Convert from Degrees to Radians and from Radians to Degrees

In the problem, t is a real number and $P = (x, y)$ is the point on the unit circle that corresponds to t . Find the exact value of the indicated trigonometric function of t .

17) $(\frac{4}{9}, \frac{\sqrt{65}}{9})$ Find $\sin t$. 17) _____

Objective: (6.2) Find the Exact Values of the Trigonometric Functions Using a Point on the Unit Circle

18) $(\frac{\sqrt{65}}{9}, \frac{4}{9})$ Find $\sec t$. 18) _____

Objective: (6.2) Find the Exact Values of the Trigonometric Functions Using a Point on the Unit Circle

19) $(-\frac{\sqrt{77}}{9}, \frac{2}{9})$ Find $\cos t$. 19) _____

Objective: (6.2) Find the Exact Values of the Trigonometric Functions Using a Point on the Unit Circle

Find the exact value. Do not use a calculator.

20) $\cot 2\pi$ 20) _____

Objective: (6.2) Find the Exact Values of the Trigonometric Functions of Quadrantal Angles

21) $\sin \pi$ 21) _____

Objective: (6.2) Find the Exact Values of the Trigonometric Functions of Quadrantal Angles

22) $\csc(-\frac{\pi}{2})$ 22) _____

Objective: (6.2) Find the Exact Values of the Trigonometric Functions of Quadrantal Angles

23) $\sec \frac{\pi}{4}$

23) _____

Objective: (6.2) Find the Exact Values of the Trigonometric Functions of $\pi/4 = 45^\circ$

24) $\cot \frac{\pi}{3}$

24) _____

Objective: (6.2) Find the Exact Values of the Trigonometric Functions of $\pi/6 = 30^\circ$ and $\pi/3 = 60^\circ$

Find the exact value of the expression. Do not use a calculator.

25) $\cot 60^\circ - \sin 45^\circ$

25) _____

Objective: (6.2) Find the Exact Values of the Trigonometric Functions of $\pi/6 = 30^\circ$ and $\pi/3 = 60^\circ$

Find the exact value. Do not use a calculator.

26) $\cos \frac{16\pi}{3}$

26) _____

Objective: (6.2) Find the Exact Values for Integer Multiples of $\pi/6 = 30^\circ$, $\pi/4 = 45^\circ$, and $\pi/3 = 60^\circ$

27) $\sec \frac{19\pi}{4}$

27) _____

Objective: (6.2) Find the Exact Values for Integer Multiples of $\pi/6 = 30^\circ$, $\pi/4 = 45^\circ$, and $\pi/3 = 60^\circ$

28) $\cot 750^\circ$

28) _____

Objective: (6.2) Find the Exact Values for Integer Multiples of $\pi/6 = 30^\circ$, $\pi/4 = 45^\circ$, and $\pi/3 = 60^\circ$

Find the exact value of the expression. Do not use a calculator.

29) $\sin 135^\circ - \sin 270^\circ$

29) _____

Objective: (6.2) Find the Exact Values for Integer Multiples of $\pi/6 = 30^\circ$, $\pi/4 = 45^\circ$, and $\pi/3 = 60^\circ$

30) $\cos \frac{\pi}{3} + \tan \frac{5\pi}{3}$

30) _____

Objective: (6.2) Find the Exact Values for Integer Multiples of $\pi/6 = 30^\circ$, $\pi/4 = 45^\circ$, and $\pi/3 = 60^\circ$

31) $\cos 120^\circ \tan 60^\circ$

31) _____

Objective: (6.2) Find the Exact Values for Integer Multiples of $\pi/6 = 30^\circ$, $\pi/4 = 45^\circ$, and $\pi/3 = 60^\circ$

Use a calculator to find the approximate value of the expression rounded to two decimal places.

32) $\csc 32^\circ$

32) _____

Objective: (6.2) Use a Calculator to Approximate the Value of a Trigonometric Function

33) $\cot \frac{\pi}{12}$

33) _____

Objective: (6.2) Use a Calculator to Approximate the Value of a Trigonometric Function

34) $\cos 8$

34) _____

Objective: (6.2) Use a Calculator to Approximate the Value of a Trigonometric Function

35) $\cos 3^\circ$

35) _____

Objective: (6.2) Use a Calculator to Approximate the Value of a Trigonometric Function

Solve the problem.

- 36) The force acting on a pendulum to bring it to its perpendicular resting point is called the restoring force. The restoring force F , in Newtons, acting on a string pendulum is given by the formula

$$F = mg \sin \theta$$

where m is the mass in kilograms of the pendulum's bob, $g \approx 9.8$ meters per second per second is the acceleration due to gravity, and θ is angle at which the pendulum is displaced from the perpendicular. What is the value of the restoring force when $m = 0.9$ kilogram and $\theta = 58^\circ$? If necessary, round the answer to the nearest tenth of a Newton.

Objective: (6.2) Use a Calculator to Approximate the Value of a Trigonometric Function

36) _____

A point on the terminal side of an angle θ is given. Find the exact value of the indicated trigonometric function of θ .

- 37) (5, 12) Find $\sin \theta$.

Objective: (6.2) Use a Circle of Radius r to Evaluate the Trigonometric Functions

37) _____

- 38) (-2, -1) Find $\csc \theta$.

Objective: (6.2) Use a Circle of Radius r to Evaluate the Trigonometric Functions

38) _____

Solve the problem.

- 39) If $\sin \theta = \frac{1}{5}$, find $\csc \theta$.

Objective: (6.2) Use a Circle of Radius r to Evaluate the Trigonometric Functions

39) _____

- 40) A racetrack curve is banked so that the outside of the curve is slightly elevated or inclined above the inside of the curve. This inclination is called the elevation of the track. The maximum speed on the track in miles per hour is given by

$$\sqrt{r(29000 + 41000 \tan \theta)}$$

where r is the radius of the track in miles and θ is the elevation in degrees. Find the maximum speed for a racetrack with an elevation of 28° and a radius of 0.5 miles. Round to the nearest mile per hour.

Objective: (6.2) Use a Circle of Radius r to Evaluate the Trigonometric Functions

40) _____

Name the quadrant in which the angle θ lies.

41) $\tan \theta > 0, \quad \sin \theta < 0$

41) _____

Objective: (6.3) Determine the Signs of the Trigonometric Functions in a Given Quadrant

42) $\sin \theta > 0, \quad \cos \theta < 0$

42) _____

Objective: (6.3) Determine the Signs of the Trigonometric Functions in a Given Quadrant

43) $\sec \theta < 0, \quad \tan \theta < 0$

43) _____

Objective: (6.3) Determine the Signs of the Trigonometric Functions in a Given Quadrant

Solve the problem.

44) Which of the following trigonometric values are negative?

44) _____

I. $\sin(-292^\circ)$

II. $\tan(-193^\circ)$

III. $\cos(-207^\circ)$

IV. $\cot 222^\circ$

Objective: (6.3) Determine the Signs of the Trigonometric Functions in a Given Quadrant

In the problem, $\sin \theta$ and $\cos \theta$ are given. Find the exact value of the indicated trigonometric function.

45) $\sin \theta = \frac{1}{4}, \quad \cos \theta = \frac{\sqrt{15}}{4}$ Find $\cot \theta$.

45) _____

Objective: (6.3) Find the Values of the Trigonometric Functions Using Fundamental Identities

46) $\sin \theta = \frac{2\sqrt{2}}{3}, \quad \cos \theta = \frac{1}{3}$ Find $\csc \theta$.

46) _____

Objective: (6.3) Find the Values of the Trigonometric Functions Using Fundamental Identities

Use the properties of the trigonometric functions to find the exact value of the expression. Do not use a calculator.

47) $\sin^2 55^\circ + \cos^2 55^\circ$

47) _____

Objective: (6.3) Find the Values of the Trigonometric Functions Using Fundamental Identities

Find the exact value of the indicated trigonometric function of θ .

48) $\tan \theta = -\frac{8}{5}$, θ in quadrant II Find $\cos \theta$.

48) _____

Objective: (6.3) Find Exact Values of the Trig Functions of an Angle Given One of the Functions and the Quadrant of the Angle

49) $\csc \theta = -\frac{7}{4}$, θ in quadrant III Find $\cot \theta$.

49) _____

Objective: (6.3) Find Exact Values of the Trig Functions of an Angle Given One of the Functions and the Quadrant of the Angle

50) $\tan \theta = \frac{15}{8}$, $180^\circ < \theta < 270^\circ$ Find $\cos \theta$.

50) _____

Objective: (6.3) Find Exact Values of the Trig Functions of an Angle Given One of the Functions and the Quadrant of the Angle

51) $\cos \theta = \frac{24}{25}$, $\frac{3\pi}{2} < \theta < 2\pi$ Find $\cot \theta$.

51) _____

Objective: (6.3) Find Exact Values of the Trig Functions of an Angle Given One of the Functions and the Quadrant of the Angle

52) $\cos \theta = \frac{2}{5}$, $\tan \theta < 0$ Find $\sin \theta$.

52) _____

Objective: (6.3) Find Exact Values of the Trig Functions of an Angle Given One of the Functions and the Quadrant of the Angle

53) $\sin \theta = \frac{1}{2}$, $\sec \theta < 0$

Find $\cos \theta$ and $\tan \theta$.

53) _____

Objective: (6.3) Find Exact Values of the Trig Functions of an Angle Given One of the Functions and the Quadrant of the Angle

Find the reference angle of the given angle.

54) 111°

54) _____

Objective: (7.4) Find the Reference Angle of a General Angle

55) 426°

55) _____

Objective: (7.4) Find the Reference Angle of a General Angle

56) -407°

56) _____

Objective: (7.4) Find the Reference Angle of a General Angle

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

57) _____

Objective: (7.4) Find the Reference Angle of a General Angle

58) $-\frac{42\pi}{8}$

58) _____

Objective: (7.4) Find the Reference Angle of a General Angle

Use the reference angle to find the exact value of the expression. Do not use a calculator.

59) $\tan 570^\circ$

59) _____

Objective: (7.4) Use Reference Angles to Find the Exact Value of a Trigonometric Function

60) $\tan \frac{-7\pi}{4}$

60) _____

Objective: (7.4) Use Reference Angles to Find the Exact Value of a Trigonometric Function

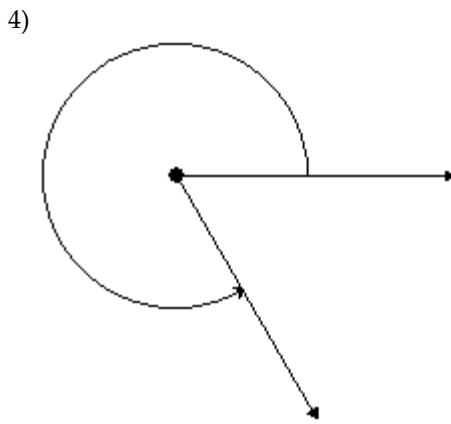
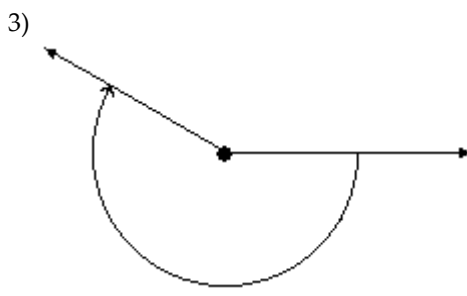
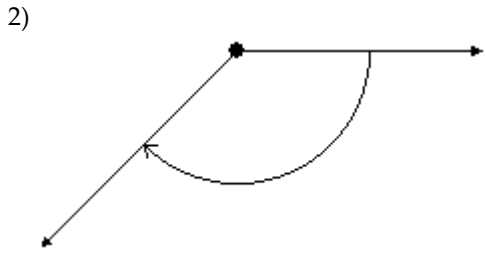
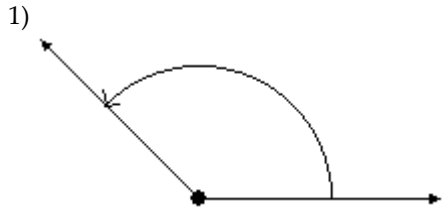
61) $\cot \frac{-11\pi}{6}$

61) _____

Objective: (7.4) Use Reference Angles to Find the Exact Value of a Trigonometric Function

Answer Key

Testname: 13SPR_CH6_MATH2_HW_5



- 5) 123.9 cm
- 6) 10.8 in.
- 7) 4.189 yd
- 8) 4.363 ft
- 9) 2.09 ft
- 10) 57.6 in.
- 11) $\frac{4\pi}{5}$
- 12) $-\frac{8\pi}{3}$
- 13) 432°
- 14) -330°
- 15) 0.21
- 16) -6.25

- 17) $\frac{\sqrt{65}}{9}$
- 18) $\frac{9\sqrt{65}}{65}$
- 19) $-\frac{\sqrt{77}}{9}$
- 20) undefined
- 21) 0
- 22) -1
- 23) $\sqrt{2}$
- 24) $\frac{\sqrt{3}}{3}$
- 25) $\frac{2\sqrt{3} - 3\sqrt{2}}{6}$
- 26) $-\frac{1}{2}$
- 27) $-\sqrt{2}$
- 28) $\sqrt{3}$
- 29) $\frac{\sqrt{2} + 2}{2}$
- 30) $\frac{1 - 2\sqrt{3}}{2}$
- 31) $-\frac{\sqrt{3}}{2}$
- 32) 1.89
- 33) 3.73
- 34) -0.15
- 35) 1.00
- 36) 7.5 N
- 37) $\frac{12}{13}$
- 38) $-\sqrt{5}$
- 39) 5
- 40) 159 mph
- 41) III
- 42) II
- 43) II
- 44) II and III
- 45) $\sqrt{15}$
- 46) $\frac{3\sqrt{2}}{4}$
- 47) 1
- 48) $-\frac{5\sqrt{89}}{89}$

Answer Key

Testname: 13SPR_CH6_MATH2_HW_5

$$49) \frac{\sqrt{33}}{4}$$

$$50) -\frac{8}{17}$$

$$51) -\frac{24}{7}$$

$$52) -\frac{\sqrt{21}}{5}$$

$$53) \cos \theta = -\frac{\sqrt{3}}{2}, \tan \theta = -\frac{\sqrt{3}}{3}$$

$$54) 69^\circ$$

$$55) 66^\circ$$

$$56) 47^\circ$$

$$57) \frac{\pi}{4}$$

$$58) \frac{\pi}{4}$$

$$59) \frac{\sqrt{3}}{3}$$

$$60) 1$$

$$61) \sqrt{3}$$