Trigonometry 3rd edition Blitzer Test Bank

SKU: 9780136921738-TEST-BANK

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

The given angle is in standard position. Determine the quadrant in which the angle lies.

1) –330°
A) Quadrant III B) Quadrant IV C) Quadrant I D) Quadrant II
Answer: C

2) 172°
A) Quadrant I B) Quadrant III C) Quadrant IV D) Quadrant II
Answer: D

3) –144°
A) Quadrant I B) Quadrant III C) Quadrant II D) Quadrant IV
Answer: B

4) 286°
A) Quadrant III B) Quadrant I C) Quadrant IV D) Quadrant II
Answer: C

Classify the angle as acute, right, obtuse, or straight.

5) 33°
A) obtuse B) right C) acute D) straight
Answer: C

6) 130°
A) right B) obtuse C) acute D) straight
Answer: B

7) 2.64°
A) obtuse B) straight C) right D) acute
Answer: D

8) 108.541°
A) acute B) straight C) obtuse D) right
Answer: C

9) π
A) right B) straight C) obtuse D) acute
Answer: B

10) $\frac{\pi}{7}$
A) right B) obtuse C) straight D) acute
Answer: D

11) $\frac{2\pi}{3}$
A) obtuse B) acute C) straight D) right
Answer: A

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Find the radian measure of the central angle of a circle of radius r that intercepts an arc of length s.

12) r = 6 inches, s = 24 inches

A) $\frac{1}{4}$ radians B) –4 radians C) 4 radians D) 4°

Answer: C

13) r = $\frac{3}{5}$ feet, s = 15 feet

A) 25° B) 9° C) 9 radians D) 25 radians

Answer: D

14) r = 1.9 meters, s = 7.03 meters

A) 0.53 radians B) 0.9 radians C) 3.7 radians D) 0.95 radians

Answer: C

15) r = 1 meter, s = 700 centimeters

A) 700 radians B) 70 radians C) 7 radians D) $\frac{1}{700}$ radians

Answer: C

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

16) 45°

A) $\frac{\pi}{5}$ radians B) $\frac{\pi}{3}$ radians C) $\frac{\pi}{6}$ radians D) $\frac{\pi}{4}$ radians

Answer: D

17) –36°

A) $-\frac{\pi}{4}$ radians B) $-\frac{\pi}{5}$ radians C) $-\frac{\pi}{6}$ radians D) $-\frac{\pi}{7}$ radians

Answer: B

18) 162°

A) $\frac{8\pi}{9}$ radians B) $\frac{10\pi}{11}$ radians C) $\frac{4}{5}\pi$ radians D) $\frac{9\pi}{10}$ radians

Answer: D

19) – 160°

A) $-\frac{8\pi}{9}$ radians B) $-\frac{7\pi}{8}$ radians C) $-\frac{7}{9}\pi$ radians D) $-\frac{9\pi}{10}$ radians

Answer: A

Convert the angle in radians to degrees.

20) $\frac{\pi}{2}$

A) 2° B) 90π° C) 90° D) $\left(\frac{\pi}{2}\right)^{\circ}$

Answer: C

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21) $-\frac{\pi}{5}$

A) $-\left(\frac{\pi}{5}\right)°$ B) −36° C) $-36\pi°$ D) −1°

Answer: B

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

A) 160° B) 135° C) $240\pi°$ D) 270°

Answer: B

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

A) $1{,}260\pi°$ B) 630° C) 11° D) 315°

Answer: B

Convert the angle in degrees to radians. Round to two decimal places.

24) 3°

A) 0.05 radians B) 0.03 radians C) 0.04 radians D) 0.02 radians

Answer: A

25) −252°

A) −4.37 radians B) −4.38 radians C) −4.39 radians D) −4.4 radians

Answer: D

Convert the angle in radians to degrees. Round to two decimal places.

26) $\frac{8}{3}\pi$ radians

A) 481° B) 482° C) 479° D) 480°

Answer: D

27) 2 radians

A) −0.12° B) 114.59° C) 0.03° D) 115.03°

Answer: B

28) −7.29 radians

A) −417.69° B) −0.32° C) −417.57° D) −0.13°

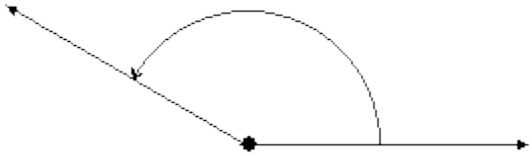
Answer: A

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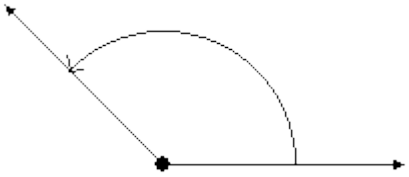
Draw the angle in standard position.

29) $\frac{2\pi}{3}$

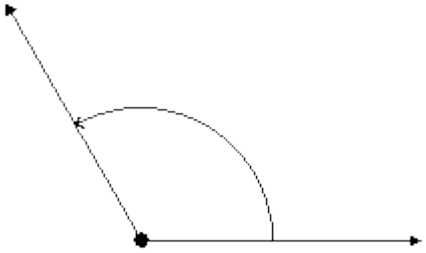
A)



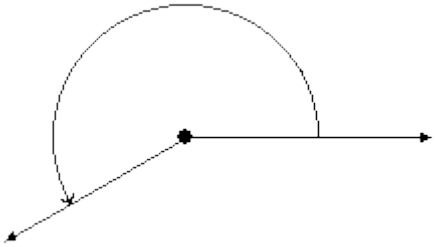
B)



C)



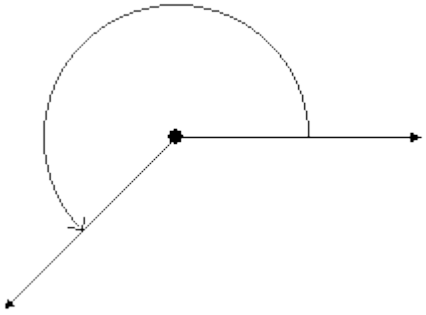
D)



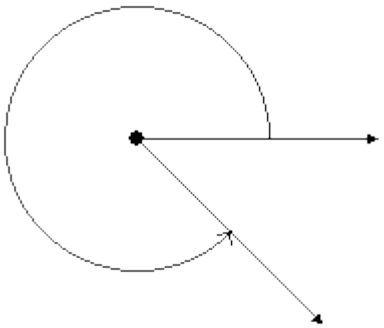
Answer: C

30) $\frac{7\pi}{4}$

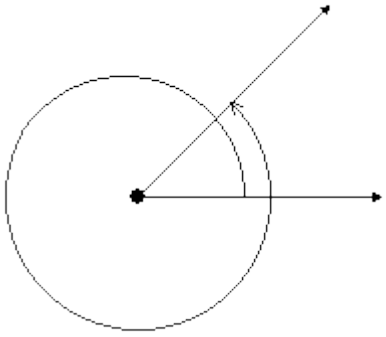
A)



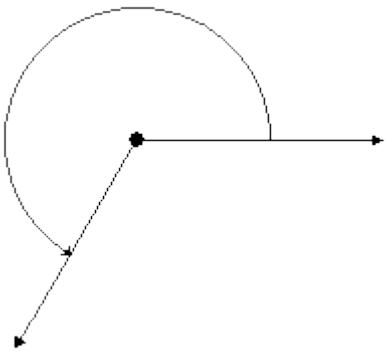
B)



C)



D)

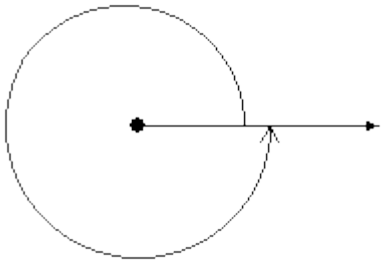


Answer: B

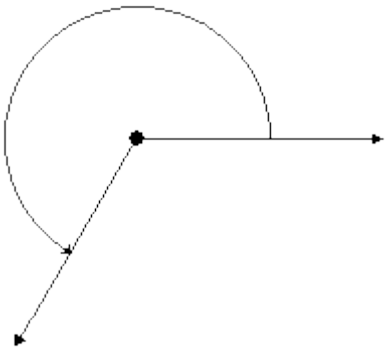
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31) $\frac{13\pi}{6}$

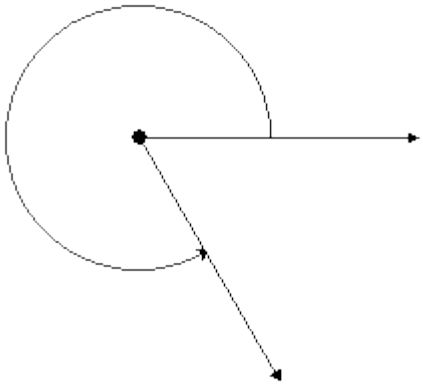
A)



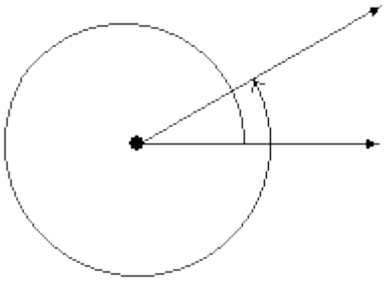
B)



C)



D)

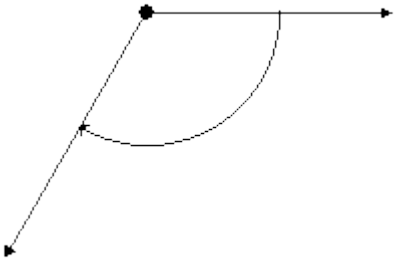


Answer: D

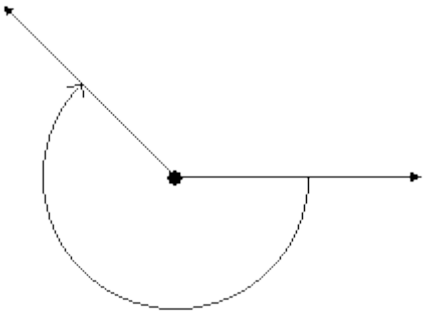
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32) $-\frac{3\pi}{4}$

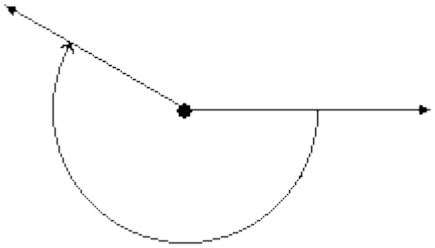
A)



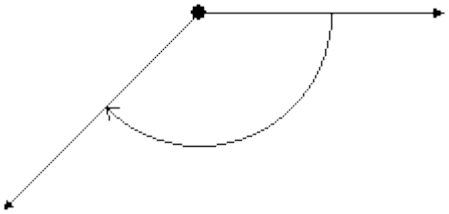
B)



C)



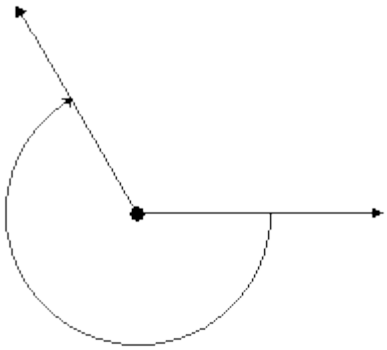
D)



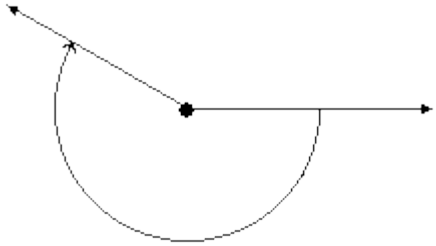
Answer: D

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

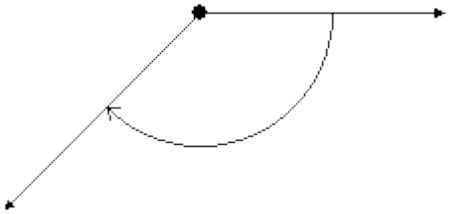
A)



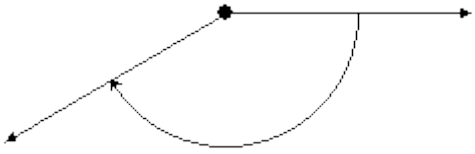
B)



C)



D)

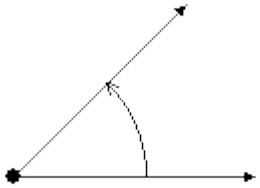


Answer: B

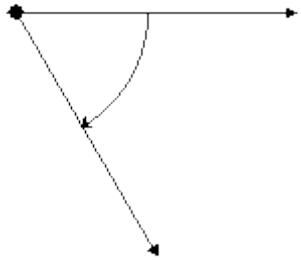
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34) 60°

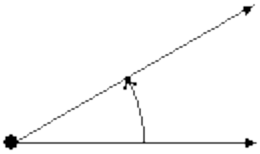
A)



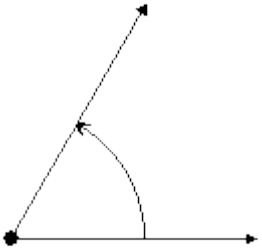
B)



C)



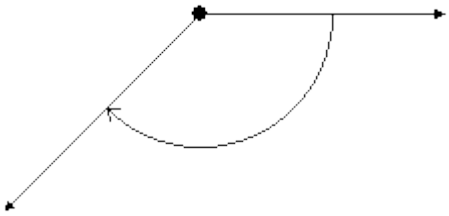
D)



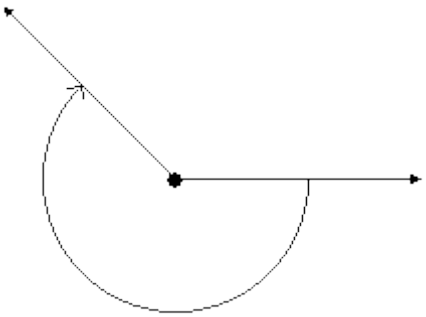
Answer: D

35) –150°

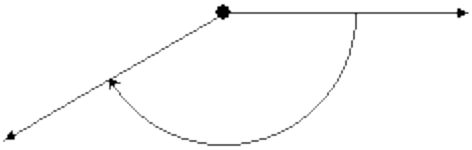
A)



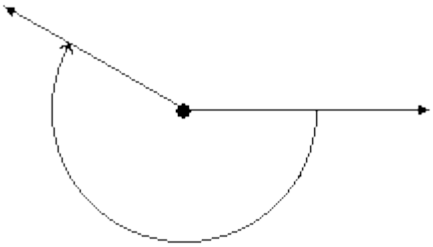
B)



C)



D)

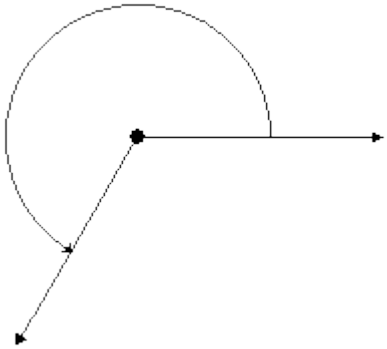


Answer: C

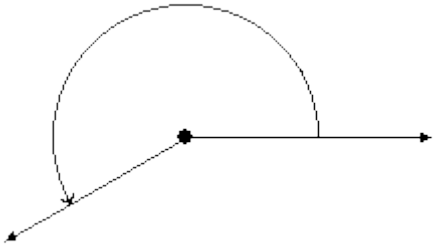
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36) 330°

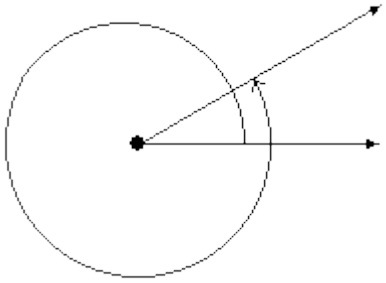
A)



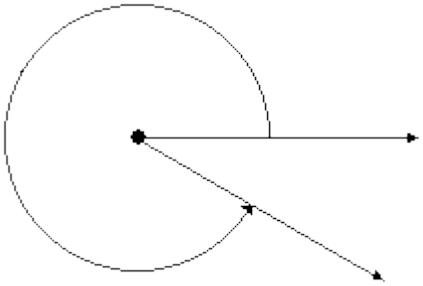
B)



C)



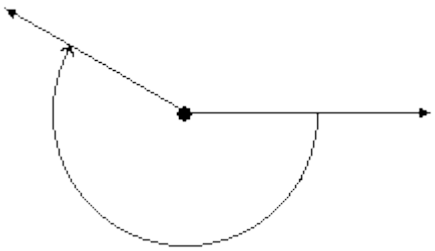
D)



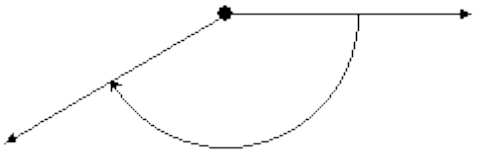
Answer: D

37) –120°

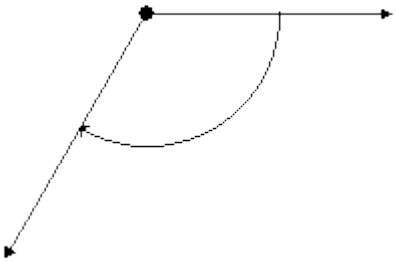
A)



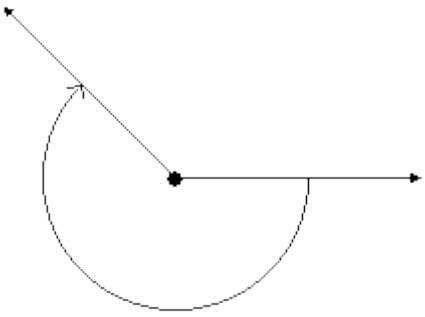
B)



C)



D)

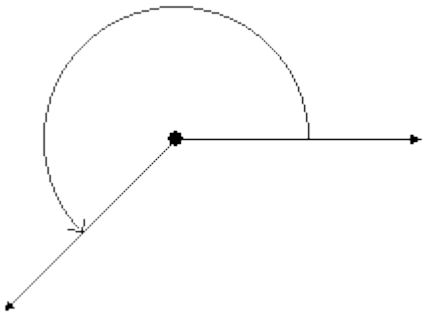


Answer: C

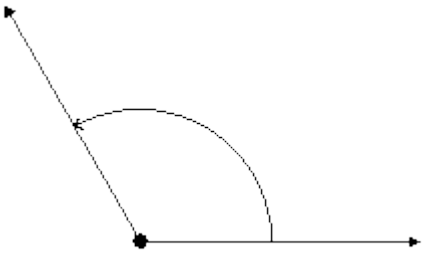
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38) 405°

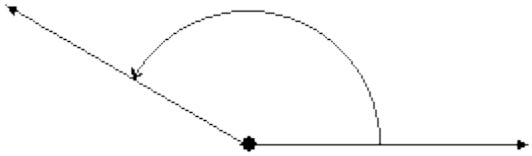
A)



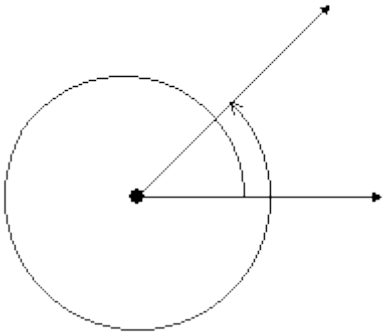
B)



C)



D)



Answer: D

Find a positive angle less than 360° or 2π that is coterminal with the given angle.

39) –235°

A) 305° B) 125° C) –55° D) 235°

Answer: B

40) 671°

A) 335.5° B) 311° C) 301° D) 491°

Answer: B

41) –785°

A) 115° B) 65° C) 295° D) 425°

Answer: C

42) $\frac{17\pi}{8}$

A) $\frac{\pi}{8}$ B) $-\frac{\pi}{8}$ C) $\frac{7\pi}{8}$ D) $\frac{9\pi}{8}$

Answer: A

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

A) $\frac{3\pi}{5}$ B) $\frac{8\pi}{5}$ C) $\frac{7\pi}{5}$ D) $-\frac{13\pi}{5}$

Answer: A

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44) $-\frac{10\pi}{9}$

A) $\frac{8\pi}{9}$ B) $\frac{17\pi}{9}$ C) $\frac{26\pi}{9}$ D) $\frac{10\pi}{9}$

Answer: A

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

45) r = 12 centimeters, θ = 50°

A) 9.42 centimeters B) 10.47 centimeters C) 8.38 centimeters D) 11.52 centimeters

Answer: B

46) r = 55 inches, θ = 20°

A) 17.35 inches B) 21.63 inches C) 19.2 inches D) 20.49 inches

Answer: C

47) r = 9.44 inches, θ = 225°

A) 37.17 inches B) 37.37 inches C) 37.27 inches D) 37.07 inches

Answer: D

Solve the problem.

48) The minute hand of a clock is 3 inches long. How far does the tip of the minute hand move in 5 minutes? If necessary, round the answer to two decimal places.

A) 2.8 inches B) 1.57 inches C) 4.08 inches D) –0.17 inches

Answer: B

49) A pendulum swings through an angle of 50° each second. If the pendulum is 55 inches long, how far does its tip move each second? If necessary, round the answer to two decimal places.

A) 48 inches B) 50.43 inches C) 46.15 inches D) 49.29 inches

Answer: A

50) A car wheel has a 16–inch radius. Through what angle (to the nearest tenth of a degree) does the wheel turn when the car rolls forward 1 ft?

A) 58.0° B) 43.0° C) 53.0° D) 48.0°

Answer: B

51) A wheel with a 32–inch radius is marked at two points on the rim. The distance between the marks along the wheel is found to be 6 inches. What is the angle (to the nearest tenth of a degree) between the radii to the two marks?

A) 8.7° B) 6.7° C) 10.7° D) 12.7°

Answer: C

Find the area of the sector of a circle of radius r formed by a central angle θ. Express area in terms of π. Then round to two decimal places.

52) r = 4 in., θ = 60°

A) $480\pi \approx 1{,}507.96$ sq in. B) $\frac{8}{3}\pi \approx 8.38$ sq in.

C) $\frac{2}{3}\pi \approx 2.09$ sq in. D) $\frac{16}{3}\pi \approx 16.76$ sq in.

Answer: B

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Find the measure of the central angle on a circle of radius r that forms a sector with the given area, A.

53) r = 9 feet, A = 81 square feet

A) 2 radians B) 3 radians C) 18 radians D) 1 radian

Answer: A

Solve the problem.

54) A lawn sprinkler rotates through an angle of 120° and projects water over a distance of 60 feet. What is the area of the lawn watered by the sprinkler? Express the answer in terms of π and then round to two decimal places.

A) $2{,}400\pi \approx 7{,}539.82$ sq ft B) $1{,}200\pi \approx 3{,}769.91$sq ft

C) $1{,}680\pi \approx 5{,}277.88$ sq ft D) $600\pi \approx 1{,}884.96$ sq ft

Answer: B

Express the angular speed in radians per second.

55) 120 revolutions per second

A) 120 radians per second B) 120π radians per second

C) 240π radians per second D) 240 radians per second

Answer: C

Solve the problem.

56) A gear with a radius of 8 centimeters is turning at $\frac{\pi}{11}$ radians per sec. What is the linear speed at a point on the outer edge of the gear?

A) $\frac{8\pi}{11}$ centimeters per second B) $\frac{\pi}{88}$ centimeters per second

C) $\frac{11\pi}{8}$ centimeters per second D) 88π centimeters per second

Answer: A

57) A car is traveling at 25 mph. If its tires have a diameter of 28 inches, how fast are the car's tires turning? Express the answer in revolutions per minute. If necessary, round to two decimal places.

A) 317.12 revolutions per minute B) 1,885.71 revolutions per minute

C) 300.12 revolutions per minute D) 600.24 revolutions per minute

Answer: C

58) To approximate the speed of a river, a circular paddle wheel with radius 0.45 feet is lowered into the water. If the current causes the wheel to rotate at a speed of 12 revolutions per minute, what is the speed of the current? Express the answer in miles per hour rounded to two decimal places, if necessary.

A) 0.06 miles per hour B) 0.19 miles per hour

C) 33.93 miles per hour D) 0.39 miles per hour

Answer: D

59) A pick–up truck is fitted with new tires which have a diameter of 40 inches. How fast will the pick–up truck be moving when the wheels are rotating at 450 revolutions per minute? Express the answer in miles per hour rounded to the nearest whole number.

A) 9 miles per hour B) 27 miles per hour C) 54 miles per hour D) 48 miles per hour

Answer: C

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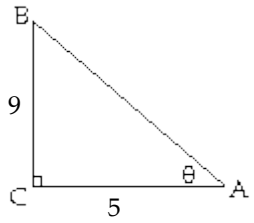
60) A carousel has a radius of 17 feet and takes 26 seconds to make one complete revolution. What is the linear speed of the carousel at its outside edge? Express the answer in feet per second. If necessary, round the answer to two decimal places.

A) 4.11 feet per second
B) 106.81 feet per second
C) 0.65 feet per second
D) 9.61 feet per second

Answer: A

Use the Pythagorean Theorem to find the length of the missing side.Then find the indicated trigonometric function of the given angle. Give an exact answer with a rational denominator.

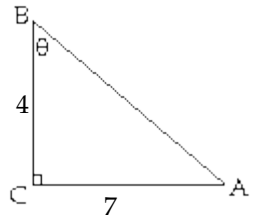
61) Find sin θ.



A) $\frac{\sqrt{106}}{5}$
B) $\frac{\sqrt{106}}{9}$
C) $\frac{9\sqrt{106}}{106}$
D) $\frac{5\sqrt{106}}{106}$

Answer: C

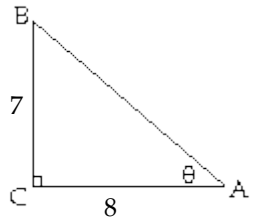
62) Find csc θ.



A) $\frac{7\sqrt{65}}{65}$
B) $\frac{4\sqrt{65}}{65}$
C) $\frac{\sqrt{65}}{4}$
D) $\frac{\sqrt{65}}{7}$

Answer: D

63) Find cos θ.

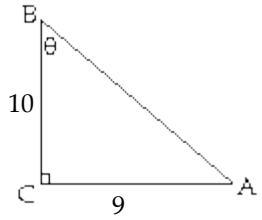


A) $\frac{\sqrt{113}}{7}$
B) $\frac{7\sqrt{113}}{113}$
C) $\frac{\sqrt{113}}{8}$
D) $\frac{8\sqrt{113}}{113}$

Answer: D

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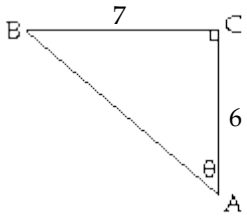
64) Find sec θ.



A) $\frac{10\sqrt{181}}{9}$ B) $\frac{9\sqrt{181}}{181}$ C) $\frac{10\sqrt{181}}{181}$ D) $\frac{\sqrt{181}}{10}$

Answer: D

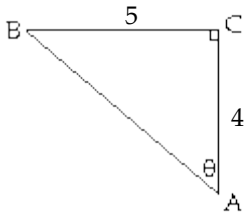
65) Find tan θ.



A) $\frac{6}{7}$ B) $\frac{7}{6}$ C) $\frac{\sqrt{85}}{6}$ D) $\frac{\sqrt{85}}{7}$

Answer: B

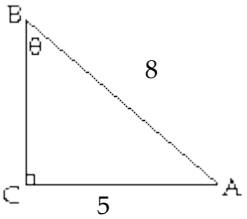
66) Find cot θ.



A) $\frac{5}{4}$ B) $\frac{5\sqrt{41}}{41}$ C) $\frac{4}{5}$ D) $\frac{4\sqrt{41}}{41}$

Answer: C

67) Find sin θ.

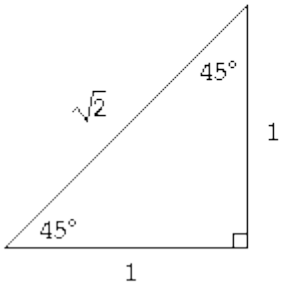


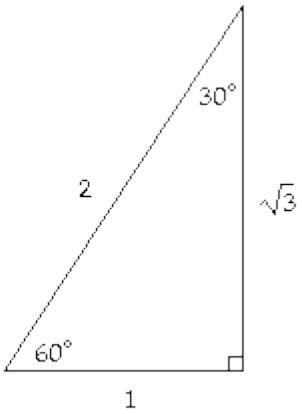
A) $\frac{\sqrt{39}}{8}$ B) $\frac{5\sqrt{39}}{39}$ C) $\frac{5}{8}$ D) $\frac{8\sqrt{39}}{39}$

Answer: C

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Use the given triangles to evaluate the expression. Rationalize all denominators.





68) cot 30°

A) $\frac{\sqrt{3}}{3}$ B) $\sqrt{3}$ C) $\frac{\sqrt{3}}{2}$ D) 1

Answer: B

69) csc 60°

A) 2 B) $\frac{2\sqrt{3}}{3}$ C) $\frac{\sqrt{3}}{2}$ D) $\sqrt{2}$

Answer: B

70) sin 45°

A) $\sqrt{2}$ B) $\frac{\sqrt{2}}{2}$ C) $\frac{1}{2}$ D) $\frac{\sqrt{3}}{2}$

Answer: B

71) cot $\frac{\pi}{6}$

A) 1 B) $\sqrt{3}$ C) $\frac{\sqrt{3}}{3}$ D) $\frac{\sqrt{3}}{2}$

Answer: B

72) csc $\frac{\pi}{3}$

A) 2 B) $\frac{\sqrt{3}}{2}$ C) $\sqrt{2}$ D) $\frac{2\sqrt{3}}{3}$

Answer: D

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

A) $\sqrt{3}$ B) $\sqrt{2}$ C) $\frac{2\sqrt{3}}{3}$ D) $\frac{\sqrt{2}}{2}$

Answer: B

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74) $\cot 45° - \sin 45°$

A) $\frac{2\sqrt{3} - 3\sqrt{2}}{6}$ B) $\frac{-\sqrt{3}}{6}$ C) $\frac{2 - \sqrt{2}}{2}$ D) $\frac{2 - \sqrt{3}}{2}$

Answer: C

75) $\cot 60° - \sin 45°$

A) $\frac{2 - \sqrt{3}}{2}$ B) $\frac{2\sqrt{3} - 3\sqrt{2}}{6}$ C) $\frac{2 - \sqrt{2}}{2}$ D) $\frac{2\sqrt{2} - 3\sqrt{3}}{6}$

Answer: B

76) $\tan \frac{\pi}{6} - \cos \frac{\pi}{6}$

A) $-\frac{\sqrt{3}}{6}$ B) $\sqrt{3}$ C) $\frac{2\sqrt{3} - 3\sqrt{2}}{6}$ D) $-\frac{\sqrt{6}}{2}$

Answer: A

θ is an acute angle and sin θ and cos θ are given. Use identities to find the indicated value.

77) $\sin \theta = \frac{3}{7}$, $\cos \theta = \frac{2\sqrt{10}}{7}$. Find csc θ.

A) $\frac{7\sqrt{10}}{20}$ B) $\frac{3\sqrt{10}}{20}$ C) $\frac{2\sqrt{10}}{3}$ D) $\frac{7}{3}$

Answer: D

78) $\sin \theta = \frac{2}{7}$, $\cos \theta = \frac{3\sqrt{5}}{7}$. Find tan θ.

A) $\frac{7\sqrt{5}}{15}$ B) $\frac{7}{2}$ C) $\frac{2\sqrt{5}}{15}$ D) $\frac{2\sqrt{5}}{2}$

Answer: C

79) $\sin \theta = \frac{\sqrt{5}}{3}$, $\cos \theta = \frac{2}{3}$. Find sec θ.

A) $\frac{3\sqrt{5}}{5}$ B) $\frac{3}{2}$ C) $\frac{\sqrt{5}}{2}$ D) $\frac{2\sqrt{5}}{5}$

Answer: B

80) $\sin \theta = -\frac{\sqrt{11}}{6}$, $\cos \theta = \frac{5}{6}$. Find cot θ.

A) $\frac{-5\sqrt{11}}{11}$ B) $\frac{\sqrt{11}}{5}$ C) $\frac{6}{5}$ D) $\frac{-6\sqrt{11}}{11}$

Answer: A

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θ is an acute angle and sin θ is given. Use the Pythagorean identity $\sin^2\theta + \cos^2\theta = 1$ to find cos θ.

81) $\sin\theta = \frac{2\sqrt{2}}{3}$

A) $\frac{1}{3}$ B) 3 C) $\frac{3\sqrt{2}}{4}$ D) $2\sqrt{2}$

Answer: A

Use an identity to find the value of the expression. Do not use a calculator.

82) $\sin^2 35° + \cos^2 35°$

A) 0.35 B) 1 C) 0.12 D) 0

Answer: B

83) $\sec^2 70° - \tan^2 70°$

A) 1 B) 0.49 C) 0 D) 0.70

Answer: A

84) $\cos 55° \sec 55°$

A) –1 B) 55 C) 0 D) 1

Answer: D

85) $\tan 65° - \frac{\sin 65°}{\cos 65°}$

A) 65 B) Undefined C) 0 D) 1

Answer: C

86) $\sin 49° \csc 49°$

A) 1 B) 49 C) 0 D) $\sin^2 49°$

Answer: A

87) $\cos 59° \sec 59°$

A) 0 B) $\cos^2 59°$ C) 1 D) 59

Answer: C

Find a cofunction with the same value as the given expression.

88) $\sin 82°$

A) $\tan 8°$ B) $\cot 8°$ C) $\cos 82°$ D) $\cos 8°$

Answer: D

89) $\cos 82°$

A) $\sin 8°$ B) $\sec 82°$ C) $\csc 8°$ D) $\sin 82°$

Answer: A

90) $\tan 16°$

A) $\cot 16°$ B) $\cot 106°$ C) $\sec 16°$ D) $\cot 74°$

Answer: D

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91) csc 69°

A) sec 21° B) sec 159° C) sin 69° D) sec 69°

Answer: A

92) $\sin\frac{\pi}{7}$

A) $\sin\frac{\pi}{7}$ B) $\sin\frac{5\pi}{14}$ C) $\cos\frac{\pi}{7}$ D) $\cos\frac{5\pi}{14}$

Answer: D

93) $\cos\frac{\pi}{9}$

A) $\sin\frac{\pi}{9}$ B) $\sin\frac{7\pi}{18}$ C) $\cos\frac{\pi}{9}$ D) $\cos\frac{7\pi}{18}$

Answer: B

94) $\tan\frac{\pi}{16}$

A) $\csc\frac{\pi}{16}$ B) $\cot\frac{\pi}{16}$ C) $\tan\frac{7\pi}{16}$ D) $\cot\frac{7\pi}{16}$

Answer: D

95) $\csc\frac{\pi}{14}$

A) $\cot\frac{\pi}{14}$ B) $\csc\frac{\pi}{14}$ C) $\sec\frac{3\pi}{7}$ D) $\csc\frac{3\pi}{7}$

Answer: C

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

96) sin 29°

A) –0.66 B) 0.56 C) –0.58 D) 0.48

Answer: D

97) cos 9°

A) 0.92 B) –0.91 C) 0.99 D) –0.98

Answer: C

98) cos 1°

A) 0.54 B) 1.00 C) –1.00 D) –0.54

Answer: B

99) tan 68°

A) 2.36 B) –2.04 C) –2.16 D) 2.48

Answer: D

100) csc 57°

A) 2.29 B) 2.42 C) 1.19 D) 1.06

Answer: C

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101) cot 0.1701

A) 1.01 B) 0.99 C) 5.82 D) 0.17

Answer: C

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

A) 3.73 B) 218.85 C) 218.75 D) 3.83

Answer: A

103) $\cos \frac{3\pi}{10}$

A) 1.00 B) 1.06 C) 0.59 D) 0.65

Answer: C

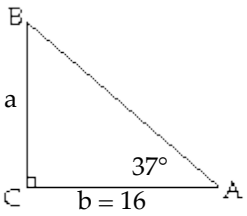
104) $\sec \frac{\pi}{12}$

A) 0.93 B) 1.11 C) 1.04 D) 1.00

Answer: C

Find the measure of the side of the right triangle whose length is designated by a lowercase letter. Round your answer to the nearest whole number.

105)



A) a = 1 cm B) a = 10 cm C) a = 21 cm D) a = 12 cm

Answer: D

Use a calculator to find the value of the acute angle θ to the nearest degree.

106) sin θ = 0.8659

A) 76° B) 1° C) 31° D) 60°

Answer: D

Use a calculator to find the value of the acute angle θ in radians, rounded to three decimal places.

107) cos θ = 0.2286

A) 7.679 radians B) 1.340 radians C) 76.785 radians D) 0.231 radians

Answer: B

Solve the problem.

108) A surveyor is measuring the distance across a small lake. He has set up his transit on one side of the lake 120 feet from a piling that is directly across from a pier on the other side of the lake. From his transit, the angle between the piling and the pier is 50°. What is the distance between the piling and the pier to the nearest foot?

A) 77 feet B) 143 feet C) 92 feet D) 101 feet

Answer: B

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109) A building 170 feet tall casts a 70 foot long shadow. If a person stands at the end of the shadow and looks up to the top of the building, what is the angle of the person's eyes to the top of the building (to the nearest hundredth of a degree)? (Assume the person's eyes are 6 feet above ground level.)

A) 66.89° B) 67.62° C) 25.27° D) 64.73°

Answer: A

110) A radio transmission tower is 130 feet tall. How long should a guy wire be if it is to be attached 14 feet from the top and is to make an angle of 26° with the ground? Give your answer to the nearest tenth of a foot.

A) 296.6 feet B) 264.6 feet C) 129.1 feet D) 144.6 feet

Answer: B

111) A straight trail with a uniform inclination of 18° leads from a lodge at an elevation of 800 feet to a mountain lake at an elevation of 8,000 feet. What is the length of the trail (to the nearest foot)?

A) 25,889 feet B) 8,412 feet C) 23,300 feet D) 7,571 feet

Answer: C

112) A building 170 feet tall casts a 60 foot long shadow. If a person looks down from the top of the building, what is the measure of the angle between the end of the shadow and the vertical side of the building (to the nearest degree)? (Assume the person's eyes are level with the top of the building.)

A) 21° B) 19° C) 69° D) 71°

Answer: B

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

113) $1 + \sin^2 75° + \sin^2 15°$

A) –1 B) 0 C) 1 D) 2

Answer: D

114) $1 - \tan^2 35° + \csc^2 55°$

A) 2 B) 1 C) –1 D) 0

Answer: A

115) $\cos 35° \sin 55° + \sin 35° \cos 55°$

A) –1 B) 2 C) 1 D) 0

Answer: C

116) If $\tan \theta = 4$, find the exact value of $\cot\left(\frac{\pi}{2} - \theta\right)$.

A) 3 B) $\frac{1}{4}$ C) 4 D) 5

Answer: C

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

117) (3, 4) Find $\sin \theta$.

A) $\frac{4}{3}$ B) $\frac{3}{5}$ C) $\frac{3}{4}$ D) $\frac{4}{5}$

Answer: D

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118) (9, 12) Find cos θ.

A) $\frac{4}{3}$ B) $\frac{4}{5}$ C) $\frac{3}{5}$ D) $\frac{3}{4}$

Answer: C

119) (–15, 36) Find sin θ.

A) $-\frac{12}{13}$ B) $\frac{12}{13}$ C) $\frac{5}{13}$ D) $-\frac{5}{13}$

Answer: B

120) (21, 28) Find csc θ.

A) $\frac{5}{3}$ B) $\frac{3}{4}$ C) $\frac{4}{3}$ D) $\frac{5}{4}$

Answer: D

121) (5, –4) Find tan θ.

A) $\frac{5}{6}$ B) $-\frac{4}{5}$ C) $-\frac{5}{4}$ D) $-\frac{2}{3}$

Answer: B

122) (4, –2) Find sin θ.

A) $\frac{2\sqrt{5}}{5}$ B) –2 C) $-\frac{\sqrt{5}}{5}$ D) $\frac{\sqrt{5}}{2}$

Answer: C

123) (–3, –2) Find sec θ.

A) $-\frac{3\sqrt{13}}{13}$ B) $\frac{2}{3}$ C) $\frac{\sqrt{13}}{2}$ D) $-\frac{\sqrt{13}}{3}$

Answer: D

124) $(-\frac{1}{5}, \frac{1}{3})$ Find cos θ.

A) $-\frac{34}{5}$ B) $\frac{34}{3}$ C) $-\frac{3\sqrt{34}}{34}$ D) $\frac{5\sqrt{34}}{34}$

Answer: C

125) (–3, 6) Find cot θ.

A) – 2 B) $-\frac{3}{7}$ C) $\frac{6}{7}$ D) $-\frac{1}{2}$

Answer: D

Evaluate the trigonometric function at the quadrantal angle, or state that the expression is undefined.

126) tan π

A) undefined B) –1 C) 1 D) 0

Answer: D

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127) $\cot \frac{3\pi}{2}$

A) 1 B) undefined C) –1 D) 0

Answer: D

Let θ be an angle in standard position. Name the quadrant in which the angle θ lies.

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

A) quadrant I B) quadrant II C) quadrant IV D) quadrant III

Answer: D

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

129) $\cos \theta = \frac{2}{3}, \quad \tan \theta < 0$ Find $\sin \theta$.

A) $-\frac{\sqrt{5}}{3}$ B) $-\frac{\sqrt{5}}{2}$ C) $-\sqrt{5}$ D) $-\frac{3}{2}$

Answer: A

130) $\sec \theta = \frac{7}{4}$, θ in quadrant IV Find $\tan \theta$.

A) $-\frac{\sqrt{33}}{4}$ B) $-\frac{7}{4}$ C) $-\frac{\sqrt{33}}{7}$ D) $-\sqrt{33}$

Answer: A

131) $\sin \theta = -\frac{4}{9}, \quad \tan \theta > 0$ Find $\sec \theta$.

A) $\frac{\sqrt{9}}{4}$ B) $-\frac{\sqrt{65}}{9}$ C) $-\frac{9\sqrt{65}}{65}$ D) $-\frac{4\sqrt{65}}{65}$

Answer: C

132) $\csc \theta = -\frac{9}{8}$, θ in quadrant III Find $\cot \theta$.

A) $-\frac{8\sqrt{17}}{17}$ B) $\frac{\sqrt{17}}{8}$ C) $-\frac{\sqrt{17}}{9}$ D) $-\frac{9\sqrt{17}}{17}$

Answer: B

133) $\tan \theta = -\frac{8}{7}$, θ in quadrant II Find $\cos \theta$.

A) $-\frac{7\sqrt{113}}{113}$ B) $\frac{7\sqrt{113}}{113}$ C) $-\frac{\sqrt{113}}{7}$ D) $\frac{\sqrt{113}}{8}$

Answer: A

134) $\cot \theta = -\frac{7}{10}, \quad \cos \theta < 0$ Find $\csc \theta$.

A) $-\frac{\sqrt{149}}{7}$ B) $\frac{7\sqrt{149}}{149}$ C) $-\frac{7\sqrt{149}}{149}$ D) $\frac{\sqrt{149}}{10}$

Answer: D

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135) $\tan\theta = -\frac{8}{15}$, $270° < \theta < 360°$ Find $\cos\theta$.

A) $\frac{15\sqrt{23}}{23}$ B) $\frac{15}{17}$ C) 15 D) $\frac{-8\sqrt{23}}{23}$

Answer: B

136) $\cos\theta = \frac{15}{17}$, $\frac{3\pi}{2} < \theta < 2\pi$ Find $\cot\theta$.

A) $-\frac{15}{8}$ B) $-\frac{15\sqrt{2}}{2}$ C) $\frac{17}{15}$ D) $-\frac{8}{15}$

Answer: A

Find the reference angle for the given angle.

137) 233°

A) 127° B) 53° C) −143° D) 37°

Answer: B

138) 121°

A) 69° B) 59° C) 31° D) 41°

Answer: B

139) 429°

A) 69° B) 159° C) 111° D) 21°

Answer: A

140) −438°

A) 12° B) 78° C) 168° D) 102°

Answer: B

141) −79°

A) 79° B) 101° C) 11° D) 169°

Answer: A

142) −262°

A) 98° B) 172° C) 82° D) 8°

Answer: C

143) −67.8°

A) 68.3° B) 67.8° C) 22.7° D) 22.2°

Answer: B

144) $\frac{7\pi}{6}$

A) $\frac{7\pi}{6}$ B) $\frac{\pi}{12}$ C) $\frac{\pi}{6}$ D) $\frac{5\pi}{6}$

Answer: C

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145) $\frac{11\pi}{12}$

A) $\frac{\pi}{12}$ B) $\frac{\pi}{24}$ C) $\frac{13\pi}{12}$ D) $\frac{11\pi}{12}$

Answer: A

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

A) $\frac{\pi}{3}$ B) $\frac{4\pi}{3}$ C) $\frac{\pi}{6}$ D) $\frac{2\pi}{3}$

Answer: A

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

A) $\frac{2\pi}{3}$ B) $\frac{\pi}{3}$ C) $\frac{4\pi}{3}$ D) $\frac{\pi}{6}$

Answer: B

148) 5.9

A) −2.76 B) 2.76 C) −0.38 D) 0.38

Answer: D

149) $\frac{17\pi}{3}$

A) $\frac{2\pi}{3}$ B) $\frac{10\pi}{3}$ C) $\frac{-\pi}{3}$ D) $\frac{\pi}{3}$

Answer: D

150) $\frac{-25\pi}{4}$

A) $\frac{\pi}{4}$ B) $\frac{-\pi}{4}$ C) $\frac{17\pi}{4}$ D) $\frac{3\pi}{4}$

Answer: A

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

151) $\sin\frac{-2\pi}{3}$

A) $-\frac{1}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) −1 D) $\frac{\sqrt{3}}{2}$

Answer: B

152) $\tan\frac{-5\pi}{6}$

A) $-\sqrt{3}$ B) $\frac{\sqrt{3}}{2}$ C) $\sqrt{3}$ D) $\frac{\sqrt{3}}{3}$

Answer: D

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153) $\tan \frac{-3\pi}{4}$

A) $\sqrt{3}$ B) 1 C) $\frac{\sqrt{3}}{3}$ D) –1

Answer: B

154) $\csc \frac{-2\pi}{3}$

A) $-\sqrt{2}$ B) $-\sqrt{3}$ C) $-\frac{1}{2}$ D) $-\frac{2\sqrt{3}}{3}$

Answer: D

155) $\sec \frac{-5\pi}{4}$

A) $\frac{\sqrt{2}}{2}$ B) $-\frac{2\sqrt{3}}{3}$ C) –2 D) $-\sqrt{2}$

Answer: D

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

A) $-\frac{\sqrt{3}}{3}$ B) $-\sqrt{3}$ C) $\frac{\sqrt{3}}{3}$ D) $\sqrt{3}$

Answer: D

157) $\cot \frac{3\pi}{2}$

A) –1 B) 0 C) 1 D) undefined

Answer: B

158) $\sec \frac{-\pi}{2}$

A) 1 B) 0 C) –1 D) undefined

Answer: D

159) $\sin 855°$

A) $-\frac{\sqrt{2}}{2}$ B) $-\frac{1}{2}$ C) $\frac{1}{2}$ D) $\frac{\sqrt{2}}{2}$

Answer: D

160) $\tan 570°$

A) $\sqrt{3}$ B) $-\sqrt{3}$ C) $\frac{\sqrt{3}}{3}$ D) $\frac{\sqrt{3}}{2}$

Answer: C

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161) csc 600°

A) $-\frac{1}{2}$ B) $-\sqrt{3}$ C) $-\sqrt{2}$ D) $-\frac{2\sqrt{3}}{3}$

Answer: D

162) cot 750°

A) $-\sqrt{3}$ B) $\frac{\sqrt{3}}{3}$ C) $-\frac{\sqrt{3}}{3}$ D) $\sqrt{3}$

Answer: D

163) $\tan\frac{103\pi}{6}$

A) $-\sqrt{3}$ B) $-\frac{\sqrt{3}}{3}$ C) $\frac{\sqrt{3}}{3}$ D) $\sqrt{3}$

Answer: C

164) $\cot\frac{-38\pi}{3}$

A) $\frac{\sqrt{3}}{3}$ B) $-\frac{\sqrt{3}}{3}$ C) $-\sqrt{3}$ D) $\sqrt{3}$

Answer: A

The point P(x, y) on the unit circle that corresponds to a real number t is given. Find the values of the indicated trigonometric function at t.

165) $\left(\frac{5}{8}, \frac{\sqrt{39}}{8}\right)$ Find sin t.

A) $\frac{\sqrt{39}}{8}$ B) $\frac{5}{8}$ C) $\frac{5\sqrt{39}}{39}$ D) $\frac{\sqrt{39}}{5}$

Answer: A

166) $\left(\frac{5}{8}, \frac{\sqrt{39}}{8}\right)$ Find tan t.

A) $\frac{8}{5}$ B) $\frac{\sqrt{39}}{5}$ C) $\frac{\sqrt{39}}{8}$ D) $\frac{5\sqrt{39}}{39}$

Answer: B

167) $\left(\frac{\sqrt{65}}{9}, \frac{4}{9}\right)$ Find sec t.

A) $\frac{\sqrt{65}}{4}$ B) $\frac{4\sqrt{65}}{65}$ C) $\frac{9}{4}$ D) $\frac{9\sqrt{65}}{65}$

Answer: D

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168) $\left(-\frac{\sqrt{55}}{8}, \frac{3}{8}\right)$ Find cos t.

A) $\frac{3}{8}$ B) $-\frac{\sqrt{55}}{8}$ C) $-\frac{\sqrt{55}}{3}$ D) $-\frac{8\sqrt{55}}{55}$

Answer: B

169) $\left(-\frac{\sqrt{55}}{8}, \frac{3}{8}\right)$ Find cot t.

A) $\frac{\sqrt{55}}{8}$ B) $-\frac{\sqrt{55}}{3}$ C) $-\frac{8}{3}$ D) $\frac{3}{8}$

Answer: B

170) $\left(-\frac{\sqrt{33}}{7}, -\frac{4}{7}\right)$ Find sin t.

A) $\frac{7}{4}$ B) $-\frac{4}{7}$ C) $-\frac{\sqrt{33}}{7}$ D) $-\frac{7\sqrt{33}}{33}$

Answer: B

171) $\left(-\frac{\sqrt{39}}{8}, -\frac{5}{8}\right)$ Find cot t.

A) $\frac{\sqrt{39}}{8}$ B) $-\frac{\sqrt{39}}{5}$ C) $\frac{\sqrt{39}}{5}$ D) $-\frac{5\sqrt{39}}{39}$

Answer: C

172) $\left(\frac{4}{7}, -\frac{\sqrt{33}}{7}\right)$ Find csc t.

A) $\frac{\sqrt{33}}{7}$ B) $-\frac{7\sqrt{33}}{33}$ C) $\frac{\sqrt{33}}{4}$ D) $-\frac{\sqrt{33}}{7}$

Answer: B

173) $\left(\frac{4}{7}, -\frac{\sqrt{33}}{7}\right)$ Find cos t.

A) $-\frac{4}{7}$ B) $-\frac{\sqrt{33}}{7}$ C) $\frac{4}{7}$ D) $\frac{\sqrt{33}}{7}$

Answer: C

174) $\left(\frac{3}{7}, -\frac{2\sqrt{10}}{7}\right)$ Find csc t.

A) $-\frac{7\sqrt{10}}{20}$ B) $-\frac{\sqrt{10}}{6}$ C) $\frac{7}{3}$ D) $\frac{3}{7}$

Answer: A

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Use the unit circle to find the value of the trigonometric function.

175) $\sec \frac{\pi}{6}$

A) $\sqrt{2}$ B) $\frac{2\sqrt{3}}{3}$ C) 2 D) $\frac{\sqrt{3}}{2}$

Answer: B

176) $\csc \frac{\pi}{3}$

A) $\frac{\sqrt{3}}{2}$ B) $\frac{2\sqrt{3}}{3}$ C) $\sqrt{2}$ D) 2

Answer: B

177) $\tan \frac{2\pi}{3}$

A) $-\frac{\sqrt{3}}{3}$ B) $-\sqrt{3}$ C) $\sqrt{3}$ D) $\frac{\sqrt{3}}{3}$

Answer: B

178) $\tan \frac{3\pi}{2}$

A) –1 B) 1 C) 0 D) undefined

Answer: D

Solve the problem.

179) What is the domain of the cosine function?

A) all real numbers, except integral multiples of π (180°)

B) all real numbers, except odd multiples of $\frac{\pi}{2}$ (90°)

C) all real numbers

D) all real numbers from –1 to 1, inclusive

Answer: C

180) What is the range of the sine function?

A) all real numbers

B) all real numbers greater than or equal to 0

C) all real numbers from –1 to 1, inclusive

D) all real numbers greater than or equal to 1 or less than or equal to –1

Answer: C

Use even and odd properties of the trigonometric functions to find the exact value of the expression.

181) $\cos\left(-\frac{\pi}{3}\right)$

A) $\frac{\sqrt{3}}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) $-\frac{1}{2}$ D) $\frac{1}{2}$

Answer: D

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182) $\cos\left(-\frac{\pi}{6}\right)$

A) $\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{3}}{2}$ D) $-\frac{1}{2}$

Answer: B

183) $\tan\left(-\frac{\pi}{6}\right)$

A) $-\frac{\sqrt{3}}{3}$ B) $-\sqrt{3}$ C) $\sqrt{3}$ D) $\frac{\sqrt{3}}{3}$

Answer: A

184) $\cos\left(-\frac{\pi}{4}\right)$

A) $-\frac{\sqrt{2}}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{2}}{2}$ D) $\frac{\sqrt{3}}{2}$

Answer: C

185) $\tan\left(-\frac{\pi}{3}\right)$

A) $-\frac{\sqrt{3}}{3}$ B) $\sqrt{3}$ C) $\frac{\sqrt{3}}{3}$ D) $-\sqrt{3}$

Answer: D

186) $\sin\left(-\frac{\pi}{2}\right)$

A) undefined B) 1 C) –1 D) 0

Answer: C

187) $\cos(-\pi)$

A) 0 B) undefined C) 1 D) –1

Answer: D

188) $\cos(-150°)$

A) $-\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{1}{2}$ D) $-\frac{\sqrt{3}}{2}$

Answer: D

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189) $\sec\left(-\frac{\pi}{3}\right)$

A) 2 B) –2 C) $-\frac{2\sqrt{3}}{3}$ D) $\frac{2\sqrt{3}}{3}$

Answer: A

190) $\csc\left(-\frac{\pi}{3}\right)$

A) –2 B) $-\frac{2\sqrt{3}}{3}$ C) $\frac{2\sqrt{3}}{3}$ D) 2

Answer: B

Use periodic properties of the trigonometric functions to find the exact value of the expression.

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

A) $-\frac{1}{2}$ B) $\frac{1}{2}$ C) $-\frac{\sqrt{3}}{2}$ D) $\frac{\sqrt{3}}{2}$

Answer: A

192) $\sin\frac{16\pi}{3}$

A) –1 B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{3}}{2}$ D) $-\frac{1}{2}$

Answer: C

193) $\cot\frac{9\pi}{4}$

A) 1 B) $\frac{\sqrt{3}}{3}$ C) $\sqrt{3}$ D) –1

Answer: A

194) $\tan 9\pi$

A) –1 B) 0 C) 1 D) undefined

Answer: B

195) $\cos\frac{29\pi}{3}$

A) $\frac{1}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{2}$ D) 2

Answer: A

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Solve the problem.

196) The mean air temperature T, in F°, at Fairbanks, Alaska, on the nth day of the year, $1 \le n \le 365$, is approximated by: $T = 37 \sin(\frac{2\pi}{365}(n - 101)) + 25$. Find the temperature at Fairbanks on day 188, to the nearest tenth.

A) 92.9° F B) 58.9° F C) 61.9° F D) 57.4° F

Answer: C

197) The total sales in dollars of some small businesses fluctuates according to the equation $S = A + B \sin \frac{\pi}{6}x$, where x is the time in months, with $x = 1$ corresponding to January, $A = 6{,}300$, and $B = 3{,}100$. Determine the month with the greatest total sales and give the sales in that month.

A) December; $9,400 B) March; $9,400 C) June; $6,300 D) September; $3,200

Answer: B

198) The height of the water, H, in feet, at a boat dock t hours after 7 A.M is given by $E = 16 + 7.8 \cos \frac{\pi}{80}t$, where t is time measured in seconds. Find the period.

A) $\frac{1}{160}$ B) $\frac{\pi}{160}$ C) 160π D) 160

Answer: D

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1) C
2) D
3) B
4) C
5) C
6) B
7) D
8) C
9) B
10) D
11) A
12) C
13) D
14) C
15) C
16) D
17) B
18) D
19) A
20) C
21) B
22) B
23) B
24) A
25) D
26) D
27) B
28) A
29) C
30) B
31) D
32) D
33) B
34) D
35) C
36) D
37) C
38) D
39) B
40) B
41) C
42) A
43) A
44) A
45) B
46) C
47) D
48) B
49) A
50) B

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51) C
52) B
53) A
54) B
55) C
56) A
57) C
58) D
59) C
60) A
61) C
62) D
63) D
64) D
65) B
66) C
67) C
68) B
69) B
70) B
71) B
72) D
73) B
74) C
75) B
76) A
77) D
78) C
79) B
80) A
81) A
82) B
83) A
84) D
85) C
86) A
87) C
88) D
89) A
90) D
91) A
92) D
93) B
94) D
95) C
96) D
97) C
98) B
99) D
100) C

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101) C
102) A
103) C
104) C
105) D
106) D
107) B
108) B
109) A
110) B
111) C
112) B
113) D
114) A
115) C
116) C
117) D
118) C
119) B
120) D
121) B
122) C
123) D
124) C
125) D
126) D
127) D
128) D
129) A
130) A
131) C
132) B
133) A
134) D
135) B
136) A
137) B
138) B
139) A
140) B
141) A
142) C
143) B
144) C
145) A
146) A
147) B
148) D
149) D
150) A

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151) B
152) D
153) B
154) D
155) D
156) D
157) B
158) D
159) D
160) C
161) D
162) D
163) C
164) A
165) A
166) B
167) D
168) B
169) B
170) B
171) C
172) B
173) C
174) A
175) B
176) B
177) B
178) D
179) C
180) C
181) D
182) B
183) A
184) C
185) D
186) C
187) D
188) D
189) A
190) B
191) A
192) C
193) A
194) B
195) A
196) C
197) B
198) D

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TEST ITEM FILE

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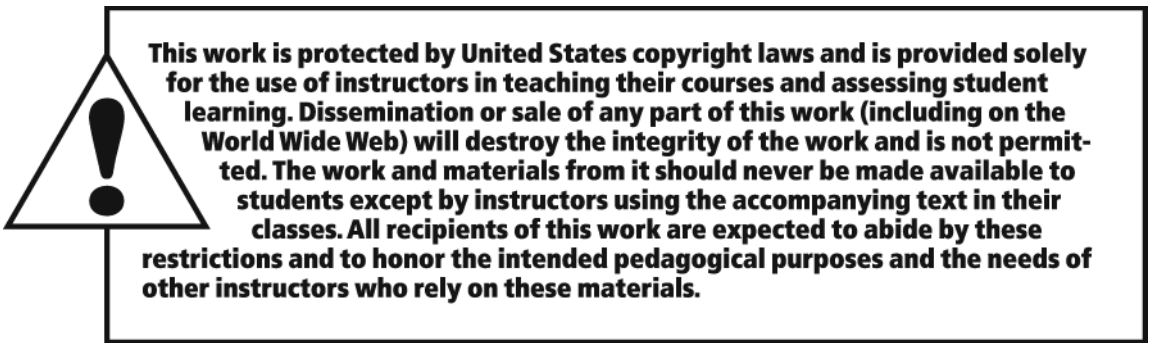
THIRD EDITION

Robert Blitzer

Miami Dade College



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ISBN-13: 978-0-13-731591-8
ISBN-10: 0-13-731591-0

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

The given angle is in standard position. Determine the quadrant in which the angle lies.

1) −330°
A) Quadrant IV B) Quadrant III C) Quadrant II D) Quadrant I
Objective: (1.1) Recognize and Use the Vocabulary of Angles

2) 172°
A) Quadrant I B) Quadrant III C) Quadrant IV D) Quadrant II
Objective: (1.1) Recognize and Use the Vocabulary of Angles

3) −144°
A) Quadrant IV B) Quadrant III C) Quadrant II D) Quadrant I
Objective: (1.1) Recognize and Use the Vocabulary of Angles

4) 286°
A) Quadrant IV B) Quadrant III C) Quadrant I D) Quadrant II
Objective: (1.1) Recognize and Use the Vocabulary of Angles

Classify the angle as acute, right, obtuse, or straight.

5) 33°
A) obtuse B) straight C) acute D) right
Objective: (1.1) Use Degree Measure

6) 130°
A) right B) obtuse C) acute D) straight
Objective: (1.1) Use Degree Measure

7) 2.64°
A) obtuse B) straight C) right D) acute
Objective: (1.1) Use Degree Measure

8) 108.541°
A) acute B) right C) straight D) obtuse
Objective: (1.1) Use Degree Measure

9) π
A) obtuse B) straight C) acute D) right
Objective: (1.1) Use Degree Measure

10) $\frac{\pi}{7}$
A) right B) straight C) obtuse D) acute
Objective: (1.1) Use Degree Measure

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11) $\frac{2\pi}{3}$

A) straight B) right C) obtuse D) acute

Objective: (1.1) Use Degree Measure

Find the radian measure of the central angle of a circle of radius r that intercepts an arc of length s.

12) r = 6 inches, s = 24 inches

A) 4° B) −4 radians C) $\frac{1}{4}$ radians D) 4 radians

Objective: (1.1) Use Radian Measure

13) r = $\frac{3}{5}$ feet, s = 15 feet

A) 9° B) 9 radians C) 25 radians D) 25°

Objective: (1.1) Use Radian Measure

14) r = 1.9 meters, s = 7.03 meters

A) 0.95 radians B) 0.53 radians C) 0.9 radians D) 3.7 radians

Objective: (1.1) Use Radian Measure

15) r = 1 meter, s = 700 centimeters

A) 700 radians B) 7 radians C) $\frac{1}{700}$ radians D) 70 radians

Objective: (1.1) Use Radian Measure

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

16) 45°

A) $\frac{\pi}{6}$ radians B) $\frac{\pi}{4}$ radians C) $\frac{\pi}{3}$ radians D) $\frac{\pi}{5}$ radians

Objective: (1.1) Convert Between Degrees and Radians

17) −36°

A) $-\frac{\pi}{4}$ radians B) $-\frac{\pi}{7}$ radians C) $-\frac{\pi}{5}$ radians D) $-\frac{\pi}{6}$ radians

Objective: (1.1) Convert Between Degrees and Radians

18) 162°

A) $\frac{9\pi}{10}$ radians B) $\frac{8\pi}{9}$ radians C) $\frac{4}{5}\pi$ radians D) $\frac{10\pi}{11}$ radians

Objective: (1.1) Convert Between Degrees and Radians

19) − 160°

A) $-\frac{8\pi}{9}$ radians B) $-\frac{7\pi}{8}$ radians C) $-\frac{7}{9}\pi$ radians D) $-\frac{9\pi}{10}$ radians

Objective: (1.1) Convert Between Degrees and Radians

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Convert the angle in radians to degrees.

20) $\frac{\pi}{2}$

A) 90° B) $\left(\frac{\pi}{2}\right)°$ C) 2° D) 90π°

Objective: (1.1) Convert Between Degrees and Radians

21) $-\frac{\pi}{5}$

A) $-\left(\frac{\pi}{5}\right)°$ B) −36° C) −36π° D) −1°

Objective: (1.1) Convert Between Degrees and Radians

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

A) 240π° B) 270° C) 135° D) 160°

Objective: (1.1) Convert Between Degrees and Radians

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

A) 1,260π° B) 315° C) 11° D) 630°

Objective: (1.1) Convert Between Degrees and Radians

Convert the angle in degrees to radians. Round to two decimal places.

24) 3°

A) 0.03 radians B) 0.05 radians C) 0.04 radians D) 0.02 radians

Objective: (1.1) Convert Between Degrees and Radians

25) −252°

A) −4.4 radians B) −4.39 radians C) −4.37 radians D) −4.38 radians

Objective: (1.1) Convert Between Degrees and Radians

Convert the angle in radians to degrees. Round to two decimal places.

26) $\frac{8}{3}\pi$ radians

A) 479° B) 480° C) 482° D) 481°

Objective: (1.1) Convert Between Degrees and Radians

27) 2 radians

A) 0.03° B) −0.12° C) 114.59° D) 115.03°

Objective: (1.1) Convert Between Degrees and Radians

28) −7.29 radians

A) −0.32° B) −417.69° C) −0.13° D) −417.57°

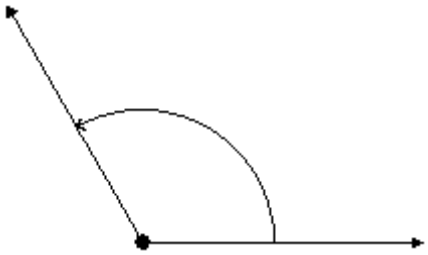
Objective: (1.1) Convert Between Degrees and Radians

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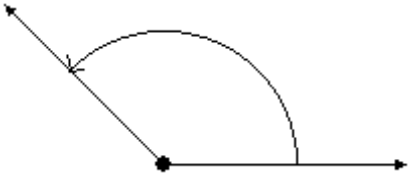
Draw the angle in standard position.

29) $\frac{2\pi}{3}$

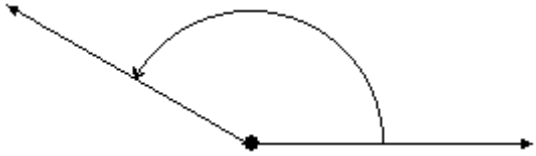
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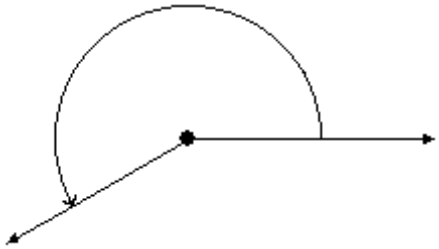
B)



C)



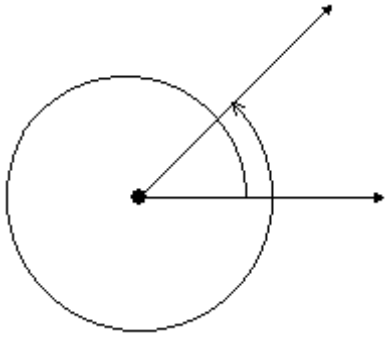
D)



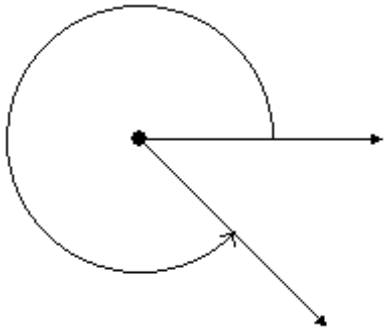
Objective: (1.1) Draw Angles in Standard Position

30) $\frac{7\pi}{4}$

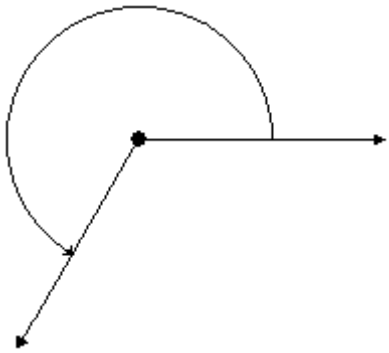
A)



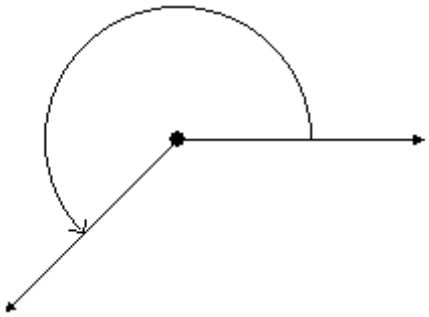
B)



C)



D)

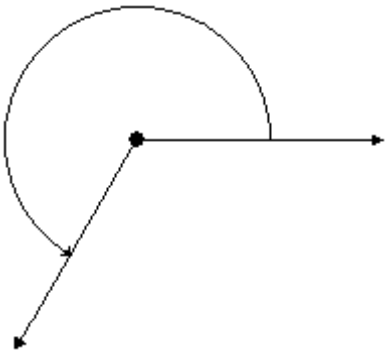


Objective: (1.1) Draw Angles in Standard Position

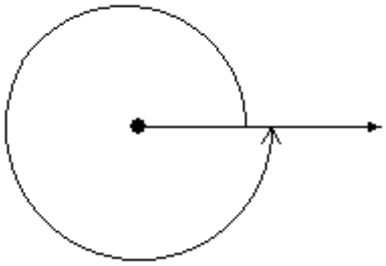
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31) $\frac{13\pi}{6}$

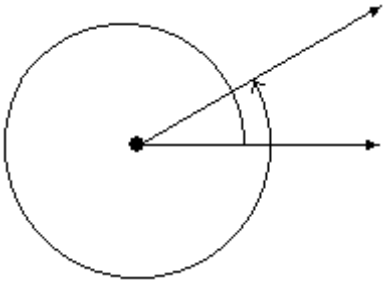
A)



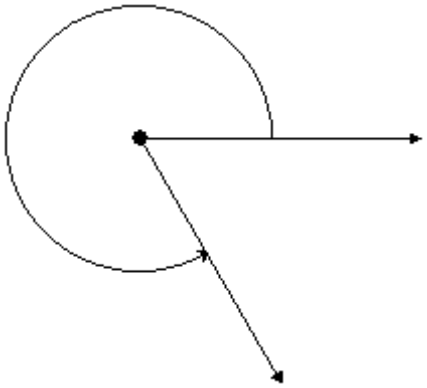
B)



C)



D)

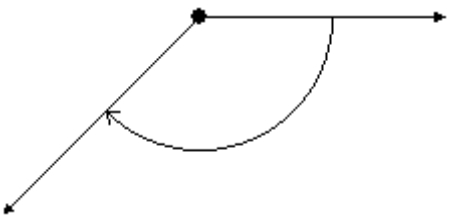


Objective: (1.1) Draw Angles in Standard Position

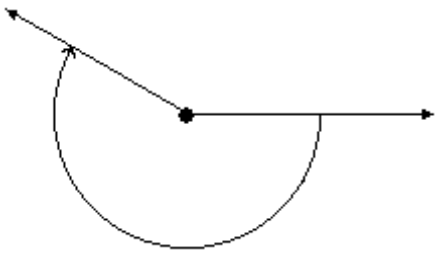
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32) $-\frac{3\pi}{4}$

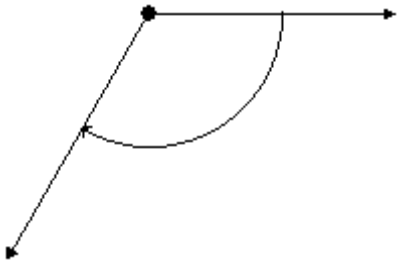
A)



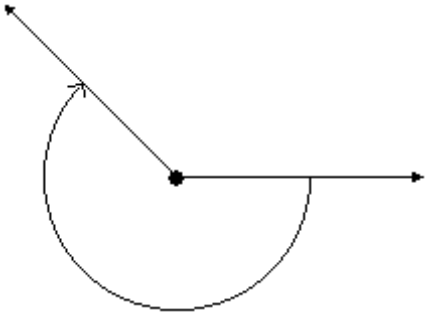
B)



C)



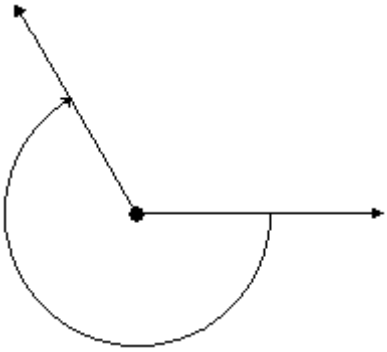
D)



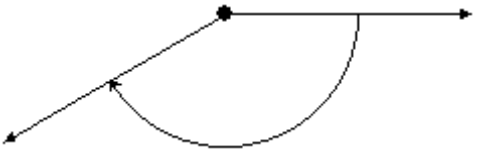
Objective: (1.1) Draw Angles in Standard Position

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

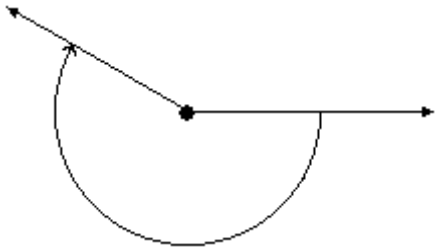
A)



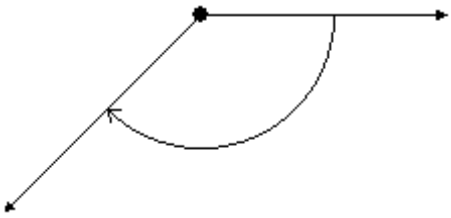
B)



C)



D)

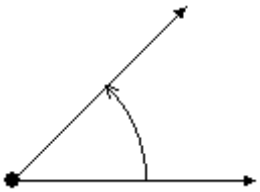


Objective: (1.1) Draw Angles in Standard Position

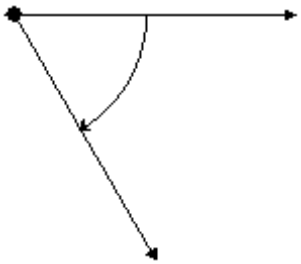
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34) 60°

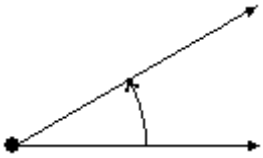
A)



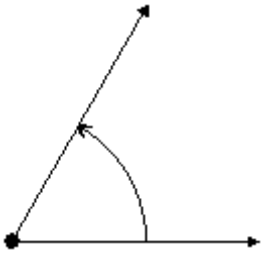
B)



C)



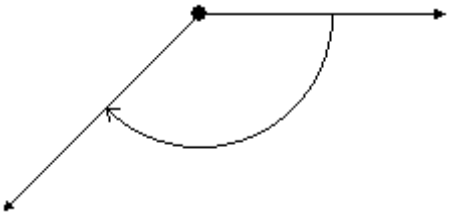
D)



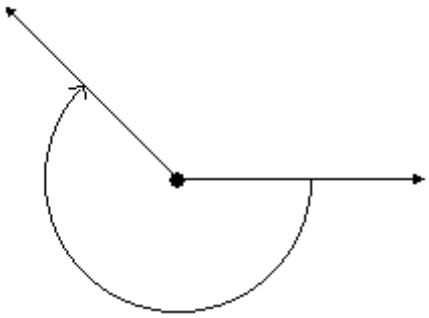
Objective: (1.1) Draw Angles in Standard Position

35) −150°

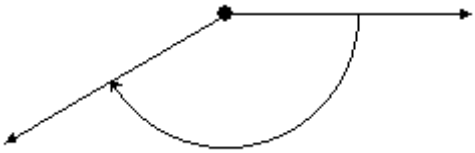
A)



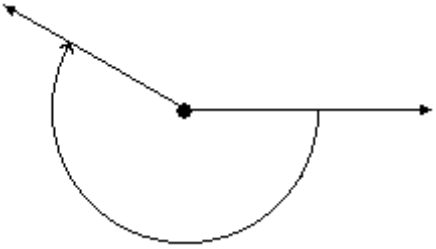
B)



C)



D)

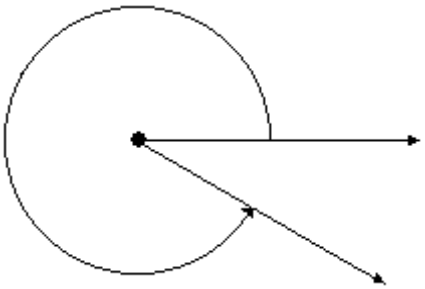


Objective: (1.1) Draw Angles in Standard Position

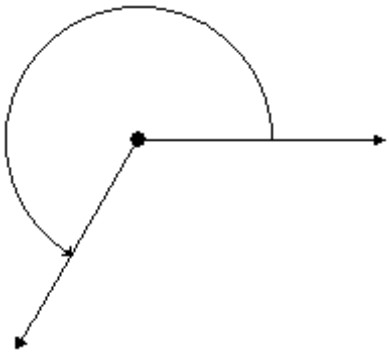
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36) 330°

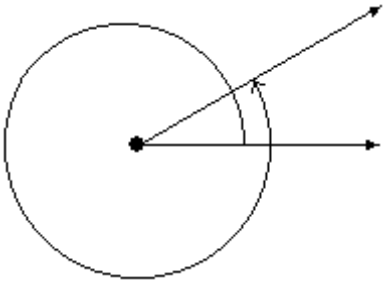
A)



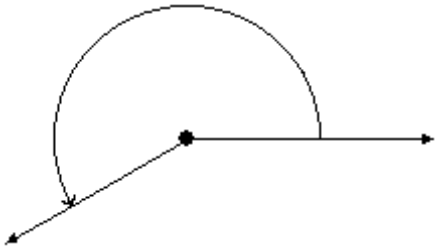
B)



C)



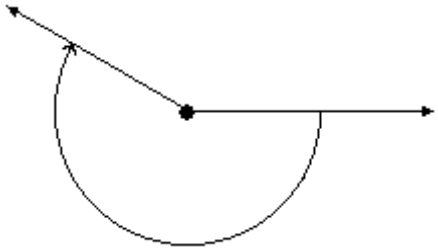
D)



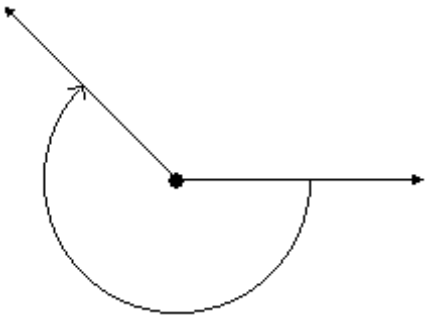
Objective: (1.1) Draw Angles in Standard Position

37) −120°

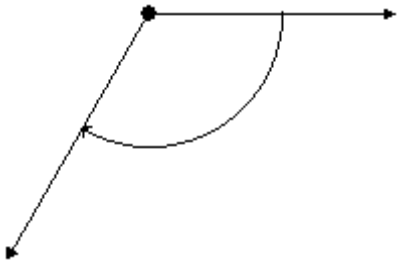
A)



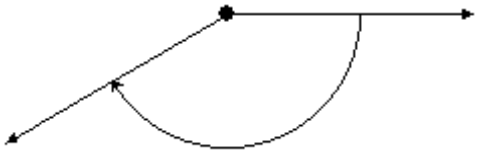
B)



C)



D)

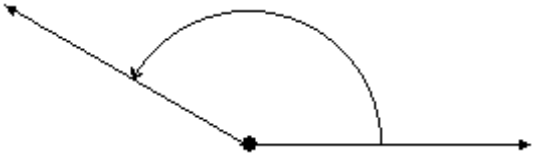


Objective: (1.1) Draw Angles in Standard Position

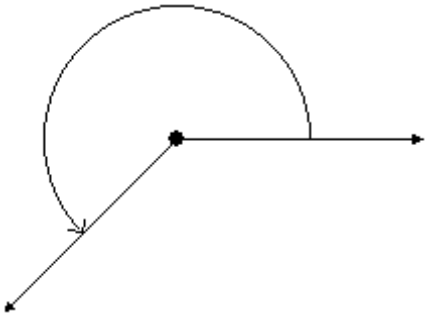
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38) 405°

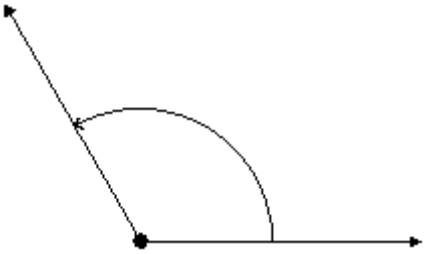
A)



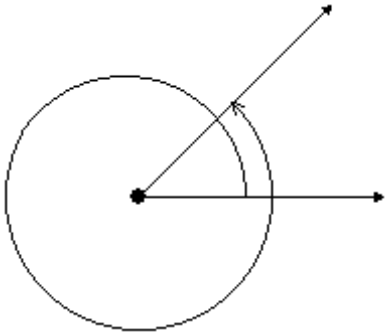
B)



C)



D)



Objective: (1.1) Draw Angles in Standard Position

Find a positive angle less than 360° or 2π that is coterminal with the given angle.

39) −235°

A) −55° B) 235° C) 305° D) 125°

Objective: (1.1) Find Coterminal Angles

40) 671°

A) 335.5° B) 301° C) 491° D) 311°

Objective: (1.1) Find Coterminal Angles

41) −785°

A) 425° B) 295° C) 65° D) 115°

Objective: (1.1) Find Coterminal Angles

42) $\frac{17\pi}{8}$

A) $-\frac{\pi}{8}$ B) $\frac{7\pi}{8}$ C) $\frac{\pi}{8}$ D) $\frac{9\pi}{8}$

Objective: (1.1) Find Coterminal Angles

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

A) $\frac{7\pi}{5}$ B) $\frac{8\pi}{5}$ C) $\frac{3\pi}{5}$ D) $-\frac{13\pi}{5}$

Objective: (1.1) Find Coterminal Angles

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44) $-\frac{10\pi}{9}$

A) $\frac{26\pi}{9}$ B) $\frac{8\pi}{9}$ C) $\frac{17\pi}{9}$ D) $\frac{10\pi}{9}$

Objective: (1.1) Find Coterminal Angles

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

45) r = 12 centimeters, θ = 50°

A) 11.52 centimeters B) 10.47 centimeters C) 9.42 centimeters D) 8.38 centimeters

Objective: (1.1) Find the Length of a Circular Arc

46) r = 55 inches, θ = 20°

A) 21.63 inches B) 19.2 inches C) 20.49 inches D) 17.35 inches

Objective: (1.1) Find the Length of a Circular Arc

47) r = 9.44 inches, θ = 225°

A) 37.37 inches B) 37.07 inches C) 37.17 inches D) 37.27 inches

Objective: (1.1) Find the Length of a Circular Arc

Solve the problem.

48) The minute hand of a clock is 3 inches long. How far does the tip of the minute hand move in 5 minutes? If necessary, round the answer to two decimal places.

A) 4.08 inches B) 2.8 inches C) −0.17 inches D) 1.57 inches

Objective: (1.1) Find the Length of a Circular Arc

49) A pendulum swings through an angle of 50° each second. If the pendulum is 55 inches long, how far does its tip move each second? If necessary, round the answer to two decimal places.

A) 46.15 inches B) 48 inches C) 49.29 inches D) 50.43 inches

Objective: (1.1) Find the Length of a Circular Arc

50) A car wheel has a 16–inch radius. Through what angle (to the nearest tenth of a degree) does the wheel turn when the car rolls forward 1 ft?

A) 48.0° B) 58.0° C) 43.0° D) 53.0°

Objective: (1.1) Find the Length of a Circular Arc

51) A wheel with a 32–inch radius is marked at two points on the rim. The distance between the marks along the wheel is found to be 6 inches. What is the angle (to the nearest tenth of a degree) between the radii to the two marks?

A) 8.7° B) 10.7° C) 12.7° D) 6.7°

Objective: (1.1) Find the Length of a Circular Arc

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Find the area of the sector of a circle of radius r formed by a central angle θ. Express area in terms of π. Then round to two decimal places.

52) r = 4 in., θ = 60°

A) $\frac{8}{3}\pi \approx 8.38$ sq in.

B) $\frac{16}{3}\pi \approx 16.76$ sq in.

C) $480\pi \approx 1{,}507.96$ sq in.

D) $\frac{2}{3}\pi \approx 2.09$ sq in.

Objective: (1.1) Find the Area of a Sector

Find the measure of the central angle on a circle of radius r that forms a sector with the given area, A.

53) r = 9 feet, A = 81 square feet

A) 18 radians B) 1 radian C) 3 radians D) 2 radians

Objective: (1.1) Find the Area of a Sector

Solve the problem.

54) A lawn sprinkler rotates through an angle of 120° and projects water over a distance of 60 feet. What is the area of the lawn watered by the sprinkler? Express the answer in terms of π and then round to two decimal places.

A) $600\pi \approx 1{,}884.96$ sq ft

B) $2{,}400\pi \approx 7{,}539.82$ sq ft

C) $1{,}200\pi \approx 3{,}769.91$sq ft

D) $1{,}680\pi \approx 5{,}277.88$ sq ft

Objective: (1.1) Find the Area of a Sector

Express the angular speed in radians per second.

55) 120 revolutions per second

A) 240 radians per second

B) 240π radians per second

C) 120 radians per second

D) 120π radians per second

Objective: (1.1) Use Linear and Angular Speed to Describe Motion on a Circular Path

Solve the problem.

56) A gear with a radius of 8 centimeters is turning at $\frac{\pi}{11}$ radians per sec. What is the linear speed at a point on the outer edge of the gear?

A) $\frac{8\pi}{11}$ centimeters per second

B) $\frac{\pi}{88}$ centimeters per second

C) 88π centimeters per second

D) $\frac{11\pi}{8}$ centimeters per second

Objective: (1.1) Use Linear and Angular Speed to Describe Motion on a Circular Path

57) A car is traveling at 25 mph. If its tires have a diameter of 28 inches, how fast are the car's tires turning? Express the answer in revolutions per minute. If necessary, round to two decimal places.

A) 300.12 revolutions per minute

B) 317.12 revolutions per minute

C) 600.24 revolutions per minute

D) 1,885.71 revolutions per minute

Objective: (1.1) Use Linear and Angular Speed to Describe Motion on a Circular Path

58) To approximate the speed of a river, a circular paddle wheel with radius 0.45 feet is lowered into the water. If the current causes the wheel to rotate at a speed of 12 revolutions per minute, what is the speed of the current? Express the answer in miles per hour rounded to two decimal places, if necessary.

A) 33.93 miles per hour

B) 0.39 miles per hour

C) 0.19 miles per hour

D) 0.06 miles per hour

Objective: (1.1) Use Linear and Angular Speed to Describe Motion on a Circular Path

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59) A pick-up truck is fitted with new tires which have a diameter of 40 inches. How fast will the pick-up truck be moving when the wheels are rotating at 450 revolutions per minute? Express the answer in miles per hour rounded to the nearest whole number.

A) 54 miles per hour B) 27 miles per hour C) 9 miles per hour D) 48 miles per hour

Objective: (1.1) Use Linear and Angular Speed to Describe Motion on a Circular Path

60) A carousel has a radius of 17 feet and takes 26 seconds to make one complete revolution. What is the linear speed of the carousel at its outside edge? Express the answer in feet per second. If necessary, round the answer to two decimal places.

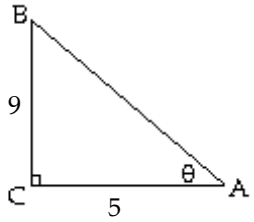
A) 106.81 feet per second B) 9.61 feet per second

C) 0.65 feet per second D) 4.11 feet per second

Objective: (1.1) Use Linear and Angular Speed to Describe Motion on a Circular Path

Use the Pythagorean Theorem to find the length of the missing side.Then find the indicated trigonometric function of the given angle. Give an exact answer with a rational denominator.

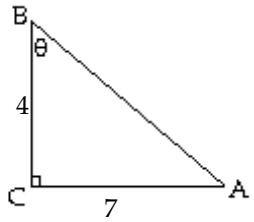
61) Find sin θ.



A) $\frac{\sqrt{106}}{9}$ B) $\frac{\sqrt{106}}{5}$ C) $\frac{9\sqrt{106}}{106}$ D) $\frac{5\sqrt{106}}{106}$

Objective: (1.2) Use Right Triangles to Evaluate Trigonometric Functions

62) Find csc θ.

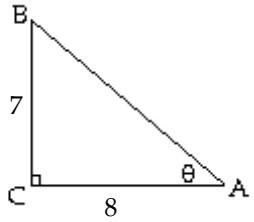


A) $\frac{\sqrt{65}}{7}$ B) $\frac{7\sqrt{65}}{65}$ C) $\frac{\sqrt{65}}{4}$ D) $\frac{4\sqrt{65}}{65}$

Objective: (1.2) Use Right Triangles to Evaluate Trigonometric Functions

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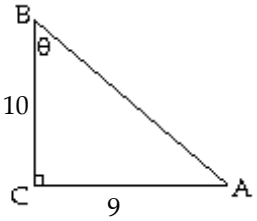
63) Find cos θ.



A) $\frac{\sqrt{113}}{7}$ B) $\frac{7\sqrt{113}}{113}$ C) $\frac{8\sqrt{113}}{113}$ D) $\frac{\sqrt{113}}{8}$

Objective: (1.2) Use Right Triangles to Evaluate Trigonometric Functions

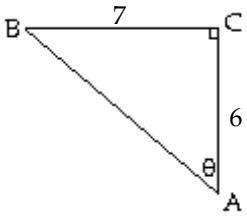
64) Find sec θ.



A) $\frac{10\sqrt{181}}{9}$ B) $\frac{9\sqrt{181}}{181}$ C) $\frac{10\sqrt{181}}{181}$ D) $\frac{\sqrt{181}}{10}$

Objective: (1.2) Use Right Triangles to Evaluate Trigonometric Functions

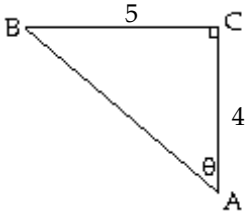
65) Find tan θ.



A) $\frac{7}{6}$ B) $\frac{\sqrt{85}}{6}$ C) $\frac{\sqrt{85}}{7}$ D) $\frac{6}{7}$

Objective: (1.2) Use Right Triangles to Evaluate Trigonometric Functions

66) Find cot θ.

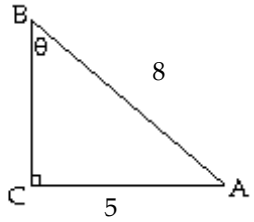


A) $\frac{4\sqrt{41}}{41}$ B) $\frac{5\sqrt{41}}{41}$ C) $\frac{5}{4}$ D) $\frac{4}{5}$

Objective: (1.2) Use Right Triangles to Evaluate Trigonometric Functions

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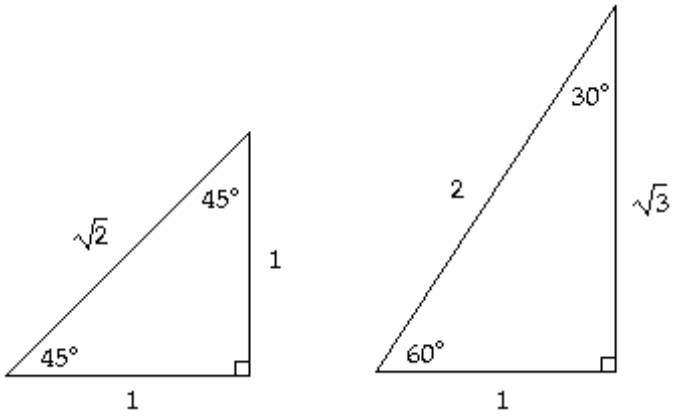
67) Find sin θ.



A) $\frac{5}{8}$ B) $\frac{\sqrt{39}}{8}$ C) $\frac{5\sqrt{39}}{39}$ D) $\frac{8\sqrt{39}}{39}$

Objective: (1.2) Use Right Triangles to Evaluate Trigonometric Functions

Use the given triangles to evaluate the expression. Rationalize all denominators.



68) cot 30°

A) 1 B) $\frac{\sqrt{3}}{3}$ C) $\frac{\sqrt{3}}{2}$ D) $\sqrt{3}$

Objective: (1.2) Find Function Values for 30°(π/6), 45°(π/4), and 60°(π/3)

69) csc 60°

A) $\sqrt{2}$ B) $\frac{2\sqrt{3}}{3}$ C) $\frac{\sqrt{3}}{2}$ D) 2

Objective: (1.2) Find Function Values for 30°(π/6), 45°(π/4), and 60°(π/3)

70) sin 45°

A) $\frac{\sqrt{3}}{2}$ B) $\frac{1}{2}$ C) $\sqrt{2}$ D) $\frac{\sqrt{2}}{2}$

Objective: (1.2) Find Function Values for 30°(π/6), 45°(π/4), and 60°(π/3)

71) cot $\frac{\pi}{6}$

A) $\frac{\sqrt{3}}{2}$ B) 1 C) $\sqrt{3}$ D) $\frac{\sqrt{3}}{3}$

Objective: (1.2) Find Function Values for 30°(π/6), 45°(π/4), and 60°(π/3)

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72) $\csc \frac{\pi}{3}$

A) $\frac{\sqrt{3}}{2}$ B) 2 C) $\sqrt{2}$ D) $\frac{2\sqrt{3}}{3}$

Objective: (1.2) Find Function Values for 30°(π/6), 45°(π/4), and 60°(π/3)

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

A) $\frac{\sqrt{2}}{2}$ B) $\frac{2\sqrt{3}}{3}$ C) $\sqrt{2}$ D) $\sqrt{3}$

Objective: (1.2) Find Function Values for 30°(π/6), 45°(π/4), and 60°(π/3)

74) $\cot 45° - \sin 45°$

A) $\frac{-\sqrt{3}}{6}$ B) $\frac{2-\sqrt{2}}{2}$ C) $\frac{2-\sqrt{3}}{2}$ D) $\frac{2\sqrt{3}-3\sqrt{2}}{6}$

Objective: (1.2) Find Function Values for 30°(π/6), 45°(π/4), and 60°(π/3)

75) $\cot 60° - \sin 45°$

A) $\frac{2-\sqrt{2}}{2}$ B) $\frac{2-\sqrt{3}}{2}$ C) $\frac{2\sqrt{2}-3\sqrt{3}}{6}$ D) $\frac{2\sqrt{3}-3\sqrt{2}}{6}$

Objective: (1.2) Find Function Values for 30°(π/6), 45°(π/4), and 60°(π/3)

76) $\tan \frac{\pi}{6} - \cos \frac{\pi}{6}$

A) $-\frac{\sqrt{6}}{2}$ B) $\frac{2\sqrt{3}-3\sqrt{2}}{6}$ C) $-\frac{\sqrt{3}}{6}$ D) $\sqrt{3}$

Objective: (1.2) Find Function Values for 30°(π/6), 45°(π/4), and 60°(π/3)

θ is an acute angle and sin θ and cos θ are given. Use identities to find the indicated value.

77) $\sin\theta = \frac{3}{7}$, $\cos\theta = \frac{2\sqrt{10}}{7}$. Find csc θ.

A) $\frac{3\sqrt{10}}{20}$ B) $\frac{2\sqrt{10}}{3}$ C) $\frac{7}{3}$ D) $\frac{7\sqrt{10}}{20}$

Objective: (1.2) Recognize and Use Fundamental Identities

78) $\sin\theta = \frac{2}{7}$, $\cos\theta = \frac{3\sqrt{5}}{7}$. Find tan θ.

A) $\frac{2\sqrt{5}}{15}$ B) $\frac{2\sqrt{5}}{2}$ C) $\frac{7}{2}$ D) $\frac{7\sqrt{5}}{15}$

Objective: (1.2) Recognize and Use Fundamental Identities

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79) $\sin\theta = \frac{\sqrt{5}}{3}$, $\cos\theta = \frac{2}{3}$. Find $\sec\theta$.

A) $\frac{2\sqrt{5}}{5}$ B) $\frac{\sqrt{5}}{2}$ C) $\frac{3}{2}$ D) $\frac{3\sqrt{5}}{5}$

Objective: (1.2) Recognize and Use Fundamental Identities

80) $\sin\theta = -\frac{\sqrt{11}}{6}$, $\cos\theta = \frac{5}{6}$. Find $\cot\theta$.

A) $\frac{\sqrt{11}}{5}$ B) $\frac{-6\sqrt{11}}{11}$ C) $\frac{-5\sqrt{11}}{11}$ D) $\frac{6}{5}$

Objective: (1.2) Recognize and Use Fundamental Identities

θ is an acute angle and $\sin\theta$ is given. Use the Pythagorean identity $\sin^2\theta + \cos^2\theta = 1$ to find $\cos\theta$.

81) $\sin\theta = \frac{2\sqrt{2}}{3}$

A) $\frac{3\sqrt{2}}{4}$ B) 3 C) $2\sqrt{2}$ D) $\frac{1}{3}$

Objective: (1.2) Recognize and Use Fundamental Identities

Use an identity to find the value of the expression. Do not use a calculator.

82) $\sin^2 35° + \cos^2 35°$

A) 0.35 B) 0 C) 0.12 D) 1

Objective: (1.2) Recognize and Use Fundamental Identities

83) $\sec^2 70° - \tan^2 70°$

A) 0.70 B) 1 C) 0 D) 0.49

Objective: (1.2) Recognize and Use Fundamental Identities

84) $\cos 55° \sec 55°$

A) 55 B) 1 C) 0 D) –1

Objective: (1.2) Recognize and Use Fundamental Identities

85) $\tan 65° - \frac{\sin 65°}{\cos 65°}$

A) 0 B) 1 C) Undefined D) 65

Objective: (1.2) Recognize and Use Fundamental Identities

86) $\sin 49° \csc 49°$

A) 0 B) 1 C) 49 D) $\sin^2 49°$

Objective: (1.2) Recognize and Use Fundamental Identities

87) $\cos 59° \sec 59°$

A) 0 B) $\cos^2 59°$ C) 1 D) 59

Objective: (1.2) Recognize and Use Fundamental Identities

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Find a cofunction with the same value as the given expression.

88) sin 82°

A) cot 8° B) cos 8° C) tan 8° D) cos 82°

Objective: (1.2) Use Equal Cofunctions of Complements

89) cos 82°

A) sec 82° B) sin 82° C) csc 8° D) sin 8°

Objective: (1.2) Use Equal Cofunctions of Complements

90) tan 16°

A) cot 74° B) cot 106° C) sec 16° D) cot 16°

Objective: (1.2) Use Equal Cofunctions of Complements

91) csc 69°

A) sin 69° B) sec 159° C) sec 21° D) sec 69°

Objective: (1.2) Use Equal Cofunctions of Complements

92) $\sin\frac{\pi}{7}$

A) $\cos\frac{\pi}{7}$ B) $\sin\frac{5\pi}{14}$ C) $\cos\frac{5\pi}{14}$ D) $\sin\frac{\pi}{7}$

Objective: (1.2) Use Equal Cofunctions of Complements

93) $\cos\frac{\pi}{9}$

A) $\sin\frac{\pi}{9}$ B) $\cos\frac{7\pi}{18}$ C) $\cos\frac{\pi}{9}$ D) $\sin\frac{7\pi}{18}$

Objective: (1.2) Use Equal Cofunctions of Complements

94) $\tan\frac{\pi}{16}$

A) $\csc\frac{\pi}{16}$ B) $\tan\frac{7\pi}{16}$ C) $\cot\frac{7\pi}{16}$ D) $\cot\frac{\pi}{16}$

Objective: (1.2) Use Equal Cofunctions of Complements

95) $\csc\frac{\pi}{14}$

A) $\csc\frac{\pi}{14}$ B) $\sec\frac{3\pi}{7}$ C) $\csc\frac{3\pi}{7}$ D) $\cot\frac{\pi}{14}$

Objective: (1.2) Use Equal Cofunctions of Complements

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

96) sin 29°

A) 0.56 B) −0.66 C) −0.58 D) 0.48

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

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97) cos 9°

A) −0.91 B) 0.99 C) 0.92 D) −0.98

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

98) cos 1°

A) −0.54 B) 0.54 C) 1.00 D) −1.00

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

99) tan 68°

A) −2.16 B) −2.04 C) 2.36 D) 2.48

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

100) csc 57°

A) 2.29 B) 2.42 C) 1.19 D) 1.06

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

101) cot 0.1701

A) 0.17 B) 0.99 C) 1.01 D) 5.82

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

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

A) 218.75 B) 3.83 C) 218.85 D) 3.73

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

103) cos $\frac{3\pi}{10}$

A) 1.00 B) 0.65 C) 1.06 D) 0.59

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

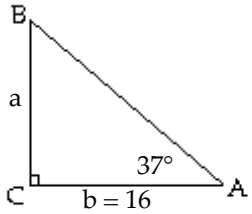
104) sec $\frac{\pi}{12}$

A) 1.11 B) 1.00 C) 0.93 D) 1.04

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

Find the measure of the side of the right triangle whose length is designated by a lowercase letter. Round your answer to the nearest whole number.

105)



A) a = 12 cm B) a = 21 cm C) a = 1 cm D) a = 10 cm

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

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Use a calculator to find the value of the acute angle θ to the nearest degree.

106) sin θ = 0.8659

A) 60° B) 76° C) 1° D) 31°

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

Use a calculator to find the value of the acute angle θ in radians, rounded to three decimal places.

107) cos θ = 0.2286

A) 7.679 radians B) 76.785 radians C) 1.340 radians D) 0.231 radians

Objective: (1.2) Evaluate Trigonometric Functions with a Calculator

Solve the problem.

108) A surveyor is measuring the distance across a small lake. He has set up his transit on one side of the lake 120 feet from a piling that is directly across from a pier on the other side of the lake. From his transit, the angle between the piling and the pier is 50°. What is the distance between the piling and the pier to the nearest foot?

A) 101 feet B) 143 feet C) 77 feet D) 92 feet

Objective: (1.2) Use Right Triangle Trigonometry to Solve Applied Problems

109) A building 170 feet tall casts a 70 foot long shadow. If a person stands at the end of the shadow and looks up to the top of the building, what is the angle of the person's eyes to the top of the building (to the nearest hundredth of a degree)? (Assume the person's eyes are 6 feet above ground level.)

A) 66.89° B) 67.62° C) 25.27° D) 64.73°

Objective: (1.2) Use Right Triangle Trigonometry to Solve Applied Problems

110) A radio transmission tower is 130 feet tall. How long should a guy wire be if it is to be attached 14 feet from the top and is to make an angle of 26° with the ground? Give your answer to the nearest tenth of a foot.

A) 144.6 feet B) 129.1 feet C) 296.6 feet D) 264.6 feet

Objective: (1.2) Use Right Triangle Trigonometry to Solve Applied Problems

111) A straight trail with a uniform inclination of 18° leads from a lodge at an elevation of 800 feet to a mountain lake at an elevation of 8,000 feet. What is the length of the trail (to the nearest foot)?

A) 7,571 feet B) 23,300 feet C) 25,889 feet D) 8,412 feet

Objective: (1.2) Use Right Triangle Trigonometry to Solve Applied Problems

112) A building 170 feet tall casts a 60 foot long shadow. If a person looks down from the top of the building, what is the measure of the angle between the end of the shadow and the vertical side of the building (to the nearest degree)? (Assume the person's eyes are level with the top of the building.)

A) 19° B) 71° C) 21° D) 69°

Objective: (1.2) Use Right Triangle Trigonometry to Solve Applied Problems

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

113) $1 + \sin^2 75° + \sin^2 15°$

A) −1 B) 2 C) 0 D) 1

Objective: (1.2) Additional Concepts

114) $1 - \tan^2 35° + \csc^2 55°$

A) −1 B) 2 C) 0 D) 1

Objective: (1.2) Additional Concepts

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115) $\cos 35°\sin 55° + \sin 35°\cos 55°$

A) 1 B) 2 C) −1 D) 0

Objective: (1.2) Additional Concepts

116) If $\tan\theta = 4$, find the exact value of $\cot\left(\frac{\pi}{2} - \theta\right)$.

A) $\frac{1}{4}$ B) 4 C) 5 D) 3

Objective: (1.2) Additional Concepts

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

117) (3, 4) Find $\sin\theta$.

A) $\frac{4}{5}$ B) $\frac{3}{4}$ C) $\frac{3}{5}$ D) $\frac{4}{3}$

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

118) (9, 12) Find $\cos\theta$.

A) $\frac{4}{3}$ B) $\frac{3}{4}$ C) $\frac{3}{5}$ D) $\frac{4}{5}$

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

119) (−15, 36) Find $\sin\theta$.

A) $-\frac{5}{13}$ B) $\frac{12}{13}$ C) $-\frac{12}{13}$ D) $\frac{5}{13}$

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

120) (21, 28) Find $\csc\theta$.

A) $\frac{4}{3}$ B) $\frac{3}{4}$ C) $\frac{5}{4}$ D) $\frac{5}{3}$

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

121) (5, −4) Find $\tan\theta$.

A) $-\frac{4}{5}$ B) $-\frac{2}{3}$ C) $\frac{5}{6}$ D) $-\frac{5}{4}$

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

122) (4, −2) Find $\sin\theta$.

A) $-\frac{\sqrt{5}}{5}$ B) $\frac{\sqrt{5}}{2}$ C) −2 D) $\frac{2\sqrt{5}}{5}$

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

123) (−3, −2) Find $\sec\theta$.

A) $\frac{\sqrt{13}}{2}$ B) $-\frac{\sqrt{13}}{3}$ C) $\frac{2}{3}$ D) $-\frac{3\sqrt{13}}{13}$

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

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124) $(-\frac{1}{5}, \frac{1}{3})$ Find $\cos\theta$.

A) $\frac{5\sqrt{34}}{34}$ B) $-\frac{34}{5}$ C) $\frac{34}{3}$ D) $-\frac{3\sqrt{34}}{34}$

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

125) $(-3, 6)$ Find $\cot\theta$.

A) -2 B) $\frac{6}{7}$ C) $-\frac{3}{7}$ D) $-\frac{1}{2}$

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

Evaluate the trigonometric function at the quadrantal angle, or state that the expression is undefined.

126) $\tan\pi$

A) 0 B) 1 C) undefined D) –1

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

127) $\cot\frac{3\pi}{2}$

A) –1 B) 0 C) 1 D) undefined

Objective: (1.3) Use the Definitions of Trigonometric Functions of Any Angle

Let θ be an angle in standard position. Name the quadrant in which the angle θ lies.

128) $\tan\theta > 0$, $\sin\theta < 0$

A) quadrant II B) quadrant IV C) quadrant I D) quadrant III

Objective: (1.3) Use the Signs of the Trigonometric Functions

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

129) $\cos\theta = \frac{2}{3}$, $\tan\theta < 0$ Find $\sin\theta$.

A) $-\frac{\sqrt{5}}{2}$ B) $-\frac{\sqrt{5}}{3}$ C) $-\frac{3}{2}$ D) $-\sqrt{5}$

Objective: (1.3) Use the Signs of the Trigonometric Functions

130) $\sec\theta = \frac{7}{4}$, θ in quadrant IV Find $\tan\theta$.

A) $-\frac{\sqrt{33}}{7}$ B) $-\frac{7}{4}$ C) $-\sqrt{33}$ D) $-\frac{\sqrt{33}}{4}$

Objective: (1.3) Use the Signs of the Trigonometric Functions

131) $\sin\theta = -\frac{4}{9}$, $\tan\theta > 0$ Find $\sec\theta$.

A) $-\frac{4\sqrt{65}}{65}$ B) $-\frac{\sqrt{65}}{9}$ C) $\frac{\sqrt{9}}{4}$ D) $-\frac{9\sqrt{65}}{65}$

Objective: (1.3) Use the Signs of the Trigonometric Functions

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132) $\csc\theta = -\frac{9}{8}$, θ in quadrant III Find $\cot\theta$.

A) $-\frac{8\sqrt{17}}{17}$ B) $-\frac{9\sqrt{17}}{17}$ C) $-\frac{\sqrt{17}}{9}$ D) $\frac{\sqrt{17}}{8}$

Objective: (1.3) Use the Signs of the Trigonometric Functions

133) $\tan\theta = -\frac{8}{7}$, θ in quadrant II Find $\cos\theta$.

A) $\frac{\sqrt{113}}{8}$ B) $-\frac{\sqrt{113}}{7}$ C) $-\frac{7\sqrt{113}}{113}$ D) $\frac{7\sqrt{113}}{113}$

Objective: (1.3) Use the Signs of the Trigonometric Functions

134) $\cot\theta = -\frac{7}{10}$, $\cos\theta < 0$ Find $\csc\theta$.

A) $-\frac{\sqrt{149}}{7}$ B) $-\frac{7\sqrt{149}}{149}$ C) $\frac{7\sqrt{149}}{149}$ D) $\frac{\sqrt{149}}{10}$

Objective: (1.3) Use the Signs of the Trigonometric Functions

135) $\tan\theta = -\frac{8}{15}$, $270° < \theta < 360°$ Find $\cos\theta$.

A) $\frac{-8\sqrt{23}}{23}$ B) $\frac{15\sqrt{23}}{23}$ C) 15 D) $\frac{15}{17}$

Objective: (1.3) Use the Signs of the Trigonometric Functions

136) $\cos\theta = \frac{15}{17}$, $\frac{3\pi}{2} < \theta < 2\pi$ Find $\cot\theta$.

A) $-\frac{15\sqrt{2}}{2}$ B) $-\frac{8}{15}$ C) $-\frac{15}{8}$ D) $\frac{17}{15}$

Objective: (1.3) Use the Signs of the Trigonometric Functions

Find the reference angle for the given angle.

137) 233°

A) 37° B) 127° C) −143° D) 53°

Objective: (1.3) Find Reference Angles

138) 121°

A) 31° B) 69° C) 41° D) 59°

Objective: (1.3) Find Reference Angles

139) 429°

A) 159° B) 21° C) 69° D) 111°

Objective: (1.3) Find Reference Angles

140) −438°

A) 78° B) 168° C) 12° D) 102°

Objective: (1.3) Find Reference Angles

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141) −79°

A) 79° B) 11° C) 169° D) 101°

Objective: (1.3) Find Reference Angles

142) −262°

A) 8° B) 82° C) 172° D) 98°

Objective: (1.3) Find Reference Angles

143) −67.8°

A) 68.3° B) 22.7° C) 22.2° D) 67.8°

Objective: (1.3) Find Reference Angles

144) $\frac{7\pi}{6}$

A) $\frac{5\pi}{6}$ B) $\frac{\pi}{6}$ C) $\frac{\pi}{12}$ D) $\frac{7\pi}{6}$

Objective: (1.3) Find Reference Angles

145) $\frac{11\pi}{12}$

A) $\frac{13\pi}{12}$ B) $\frac{\pi}{12}$ C) $\frac{\pi}{24}$ D) $\frac{11\pi}{12}$

Objective: (1.3) Find Reference Angles

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

A) $\frac{\pi}{6}$ B) $\frac{\pi}{3}$ C) $\frac{2\pi}{3}$ D) $\frac{4\pi}{3}$

Objective: (1.3) Find Reference Angles

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

A) $\frac{\pi}{6}$ B) $\frac{2\pi}{3}$ C) $\frac{\pi}{3}$ D) $\frac{4\pi}{3}$

Objective: (1.3) Find Reference Angles

148) 5.9

A) −0.38 B) 0.38 C) 2.76 D) −2.76

Objective: (1.3) Find Reference Angles

149) $\frac{17\pi}{3}$

A) $\frac{10\pi}{3}$ B) $\frac{2\pi}{3}$ C) $\frac{\pi}{3}$ D) $\frac{-\pi}{3}$

Objective: (1.3) Find Reference Angles

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150) $\frac{-25\pi}{4}$

A) $\frac{\pi}{4}$ B) $\frac{-\pi}{4}$ C) $\frac{3\pi}{4}$ D) $\frac{17\pi}{4}$

Objective: (1.3) Find Reference Angles

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

151) $\sin\frac{-2\pi}{3}$

A) $-\frac{1}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{2}$ D) -1

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

152) $\tan\frac{-5\pi}{6}$

A) $-\sqrt{3}$ B) $\frac{\sqrt{3}}{3}$ C) $\frac{\sqrt{3}}{2}$ D) $\sqrt{3}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

153) $\tan\frac{-3\pi}{4}$

A) -1 B) 1 C) $\sqrt{3}$ D) $\frac{\sqrt{3}}{3}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

154) $\csc\frac{-2\pi}{3}$

A) $-\frac{1}{2}$ B) $-\sqrt{2}$ C) $-\sqrt{3}$ D) $-\frac{2\sqrt{3}}{3}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

155) $\sec\frac{-5\pi}{4}$

A) $\frac{\sqrt{2}}{2}$ B) -2 C) $-\sqrt{2}$ D) $-\frac{2\sqrt{3}}{3}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

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

A) $-\sqrt{3}$ B) $-\frac{\sqrt{3}}{3}$ C) $\sqrt{3}$ D) $\frac{\sqrt{3}}{3}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

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157) $\cot \frac{3\pi}{2}$

A) –1 B) 1 C) 0 D) undefined

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

158) $\sec \frac{-\pi}{2}$

A) 0 B) –1 C) 1 D) undefined

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

159) $\sin 855°$

A) $\frac{\sqrt{2}}{2}$ B) $-\frac{\sqrt{2}}{2}$ C) $-\frac{1}{2}$ D) $\frac{1}{2}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

160) $\tan 570°$

A) $\sqrt{3}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{3}$ D) $-\sqrt{3}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

161) $\csc 600°$

A) $-\frac{1}{2}$ B) $-\sqrt{3}$ C) $-\sqrt{2}$ D) $-\frac{2\sqrt{3}}{3}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

162) $\cot 750°$

A) $-\frac{\sqrt{3}}{3}$ B) $-\sqrt{3}$ C) $\sqrt{3}$ D) $\frac{\sqrt{3}}{3}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

163) $\tan \frac{103\pi}{6}$

A) $\sqrt{3}$ B) $-\sqrt{3}$ C) $-\frac{\sqrt{3}}{3}$ D) $\frac{\sqrt{3}}{3}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

164) $\cot \frac{-38\pi}{3}$

A) $-\sqrt{3}$ B) $-\frac{\sqrt{3}}{3}$ C) $\sqrt{3}$ D) $\frac{\sqrt{3}}{3}$

Objective: (1.3) Use Reference Angles to Evaluate Trigonometric Functions

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The point P(x, y) on the unit circle that corresponds to a real number t is given. Find the values of the indicated trigonometric function at t.

165) $\left(\frac{5}{8}, \frac{\sqrt{39}}{8}\right)$ Find sin t.

A) $\frac{\sqrt{39}}{8}$ B) $\frac{5}{8}$ C) $\frac{5\sqrt{39}}{39}$ D) $\frac{\sqrt{39}}{5}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

166) $\left(\frac{5}{8}, \frac{\sqrt{39}}{8}\right)$ Find tan t.

A) $\frac{8}{5}$ B) $\frac{\sqrt{39}}{5}$ C) $\frac{5\sqrt{39}}{39}$ D) $\frac{\sqrt{39}}{8}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

167) $\left(\frac{\sqrt{65}}{9}, \frac{4}{9}\right)$ Find sec t.

A) $\frac{9\sqrt{65}}{65}$ B) $\frac{4\sqrt{65}}{65}$ C) $\frac{9}{4}$ D) $\frac{\sqrt{65}}{4}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

168) $\left(-\frac{\sqrt{55}}{8}, \frac{3}{8}\right)$ Find cos t.

A) $-\frac{\sqrt{55}}{3}$ B) $\frac{3}{8}$ C) $-\frac{\sqrt{55}}{8}$ D) $-\frac{8\sqrt{55}}{55}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

169) $\left(-\frac{\sqrt{55}}{8}, \frac{3}{8}\right)$ Find cot t.

A) $-\frac{\sqrt{55}}{3}$ B) $\frac{\sqrt{55}}{8}$ C) $\frac{3}{8}$ D) $-\frac{8}{3}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

170) $\left(-\frac{\sqrt{33}}{7}, -\frac{4}{7}\right)$ Find sin t.

A) $\frac{7}{4}$ B) $-\frac{4}{7}$ C) $-\frac{\sqrt{33}}{7}$ D) $-\frac{7\sqrt{33}}{33}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

171) $\left(-\frac{\sqrt{39}}{8}, -\frac{5}{8}\right)$ Find cot t.

A) $\frac{\sqrt{39}}{5}$ B) $-\frac{5\sqrt{39}}{39}$ C) $\frac{\sqrt{39}}{8}$ D) $-\frac{\sqrt{39}}{5}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

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172) $\left(\frac{4}{7}, -\frac{\sqrt{33}}{7}\right]$ Find csc t.

A) $-\frac{\sqrt{33}}{7}$ B) $\frac{\sqrt{33}}{4}$ C) $-\frac{7\sqrt{33}}{33}$ D) $\frac{\sqrt{33}}{7}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

173) $\left(\frac{4}{7}, -\frac{\sqrt{33}}{7}\right]$ Find cos t.

A) $-\frac{4}{7}$ B) $\frac{4}{7}$ C) $-\frac{\sqrt{33}}{7}$ D) $\frac{\sqrt{33}}{7}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

174) $\left(\frac{3}{7}, -\frac{2\sqrt{10}}{7}\right]$ Find csc t.

A) $-\frac{\sqrt{10}}{6}$ B) $\frac{7}{3}$ C) $\frac{3}{7}$ D) $-\frac{7\sqrt{10}}{20}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

Use the unit circle to find the value of the trigonometric function.

175) $\sec\frac{\pi}{6}$

A) $\sqrt{2}$ B) $\frac{2\sqrt{3}}{3}$ C) 2 D) $\frac{\sqrt{3}}{2}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

176) $\csc\frac{\pi}{3}$

A) $\sqrt{2}$ B) 2 C) $\frac{2\sqrt{3}}{3}$ D) $\frac{\sqrt{3}}{2}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

177) $\tan\frac{2\pi}{3}$

A) $-\frac{\sqrt{3}}{3}$ B) $\frac{\sqrt{3}}{3}$ C) $-\sqrt{3}$ D) $\sqrt{3}$

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

178) $\tan\frac{3\pi}{2}$

A) 0 B) undefined C) –1 D) 1

Objective: (1.4) Use a Unit Circle to Define Trigonometric Functions of Real Numbers

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Solve the problem.

179) What is the domain of the cosine function?

A) all real numbers from –1 to 1, inclusive

B) all real numbers, except odd multiples of $\frac{\pi}{2}$ (90°)

C) all real numbers, except integral multiples of π (180°)

D) all real numbers

Objective: (1.4) Recognize the Domain and Range of Sine and Cosine Functions

180) What is the range of the sine function?

A) all real numbers from –1 to 1, inclusive

B) all real numbers

C) all real numbers greater than or equal to 0

D) all real numbers greater than or equal to 1 or less than or equal to –1

Objective: (1.4) Recognize the Domain and Range of Sine and Cosine Functions

Use even and odd properties of the trigonometric functions to find the exact value of the expression.

181) $\cos\left(-\frac{\pi}{3}\right)$

A) $\frac{\sqrt{3}}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) $-\frac{1}{2}$ D) $\frac{1}{2}$

Objective: (1.4) Use Even and Odd Trigonometric Functions

182) $\cos\left(-\frac{\pi}{6}\right)$

A) $\frac{1}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{2}$ D) $-\frac{1}{2}$

Objective: (1.4) Use Even and Odd Trigonometric Functions

183) $\tan\left(-\frac{\pi}{6}\right)$

A) $-\frac{\sqrt{3}}{3}$ B) $\sqrt{3}$ C) $-\sqrt{3}$ D) $\frac{\sqrt{3}}{3}$

Objective: (1.4) Use Even and Odd Trigonometric Functions

184) $\cos\left(-\frac{\pi}{4}\right)$

A) $-\frac{\sqrt{3}}{2}$ B) $-\frac{\sqrt{2}}{2}$ C) $\frac{\sqrt{3}}{2}$ D) $\frac{\sqrt{2}}{2}$

Objective: (1.4) Use Even and Odd Trigonometric Functions

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185) $\tan\left(-\frac{\pi}{3}\right)$

A) $\frac{\sqrt{3}}{3}$ B) $\sqrt{3}$ C) $-\frac{\sqrt{3}}{3}$ D) $-\sqrt{3}$

Objective: (1.4) Use Even and Odd Trigonometric Functions

186) $\sin\left(-\frac{\pi}{2}\right)$

A) 1 B) 0 C) undefined D) −1

Objective: (1.4) Use Even and Odd Trigonometric Functions

187) $\cos(-\pi)$

A) 0 B) 1 C) undefined D) −1

Objective: (1.4) Use Even and Odd Trigonometric Functions

188) $\cos(-150°)$

A) $-\frac{\sqrt{3}}{2}$ B) $\frac{1}{2}$ C) $\frac{\sqrt{3}}{2}$ D) $-\frac{1}{2}$

Objective: (1.4) Use Even and Odd Trigonometric Functions

189) $\sec\left(-\frac{\pi}{3}\right)$

A) $-\frac{2\sqrt{3}}{3}$ B) −2 C) $\frac{2\sqrt{3}}{3}$ D) 2

Objective: (1.4) Use Even and Odd Trigonometric Functions

190) $\csc\left(-\frac{\pi}{3}\right)$

A) $\frac{2\sqrt{3}}{3}$ B) 2 C) $-\frac{2\sqrt{3}}{3}$ D) −2

Objective: (1.4) Use Even and Odd Trigonometric Functions

Use periodic properties of the trigonometric functions to find the exact value of the expression.

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

A) $-\frac{1}{2}$ B) $\frac{1}{2}$ C) $-\frac{\sqrt{3}}{2}$ D) $\frac{\sqrt{3}}{2}$

Objective: (1.4) Use Periodic Properties

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192) $\sin \frac{16\pi}{3}$

A) $-\frac{1}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{2}$ D) –1

Objective: (1.4) Use Periodic Properties

193) $\cot \frac{9\pi}{4}$

A) 1 B) $\sqrt{3}$ C) –1 D) $\frac{\sqrt{3}}{3}$

Objective: (1.4) Use Periodic Properties

194) $\tan 9\pi$

A) undefined B) 1 C) 0 D) –1

Objective: (1.4) Use Periodic Properties

195) $\cos \frac{29\pi}{3}$

A) $\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) 2 D) $-\frac{\sqrt{3}}{2}$

Objective: (1.4) Use Periodic Properties

Solve the problem.

196) The mean air temperature T, in F°, at Fairbanks, Alaska, on the nth day of the year, $1 \le n \le 365$, is approximated by: $T = 37 \sin(\frac{2\pi}{365}(n - 101)) + 25$. Find the temperature at Fairbanks on day 188, to the nearest tenth.

A) 92.9° F B) 58.9° F C) 61.9° F D) 57.4° F

Objective: (1.4) Solve Apps: Trigonometric Functions

197) The total sales in dollars of some small businesses fluctuates according to the equation $S = A + B \sin \frac{\pi}{6}x$, where x is the time in months, with x = 1 corresponding to January, A = 6,300, and B = 3,100. Determine the month with the greatest total sales and give the sales in that month.

A) March; $9,400 B) September; $3,200 C) December; $9,400 D) June; $6,300

Objective: (1.4) Solve Apps: Trigonometric Functions

198) The height of the water, H, in feet, at a boat dock t hours after 7 A.M is given by $E = 16 + 7.8 \cos \frac{\pi}{80}t$, where t is time measured in seconds. Find the period.

A) 160π B) 160 C) $\frac{\pi}{160}$ D) $\frac{1}{160}$

Objective: (1.4) Solve Apps: Trigonometric Functions

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1) D
2) D
3) B
4) A
5) C
6) B
7) D
8) D
9) B
10) D
11) C
12) D
13) C
14) D
15) B
16) B
17) C
18) A
19) A
20) A
21) B
22) C
23) D
24) B
25) A
26) B
27) C
28) B
29) A
30) B
31) C
32) A
33) C
34) D
35) C
36) A
37) C
38) D
39) D
40) D
41) B
42) C
43) C
44) B
45) B
46) B
47) B
48) D
49) B
50) C
51) B
52) A
53) D
54) C
55) B
56) A
57) A
58) B
59) A
60) D
61) C
62) A
63) C
64) D
65) A
66) D
67) A
68) D
69) B
70) D
71) C
72) D
73) C
74) B
75) D
76) C
77) C
78) A
79) C
80) C
81) D
82) D
83) B
84) B
85) A
86) B
87) C
88) B
89) D
90) A
91) C
92) C
93) D
94) C
95) B
96) D
97) B
98) C
99) D
100) C
101) D
102) D
103) D
104) D
105) A
106) A
107) C
108) B
109) A
110) D
111) B
112) A
113) B
114) B
115) A
116) B
117) A
118) C
119) B
120) C
121) A
122) A
123) B
124) D
125) D
126) A
127) B
128) D
129) B
130) D
131) D
132) D
133) C
134) D
135) D
136) C
137) D
138) D
139) C
140) A
141) A
142) B
143) D
144) B
145) B
146) B
147) C
148) B
149) C
150) A
151) B
152) B
153) B
154) D
155) C
156) C
157) C
158) D
159) A
160) C
161) D
162) C
163) D
164) D
165) A
166) B
167) A
168) C
169) A
170) B
171) A
172) C
173) B
174) D
175) B
176) C
177) C
178) B
179) D
180) A
181) D
182) C
183) A
184) D
185) D
186) D
187) D
188) A
189) D
190) C
191) A
192) B
193) A
194) C
195) A
196) C
197) A
198) B

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine the amplitude or period as requested.

1) Amplitude of $y = -2 \sin x$

A) 2 B) $\frac{\pi}{2}$ C) -2π D) 2π

Objective: (2.1) Understand the Graph of $y = \sin x$

2) Period of $y = -5 \sin x$

A) 2π B) 5 C) $\frac{\pi}{5}$ D) π

Objective: (2.1) Understand the Graph of $y = \sin x$

3) Amplitude of $y = -\frac{1}{2} \sin x$

A) 2 B) $-\frac{1}{2}$ C) $\frac{\pi}{2}$ D) $\frac{1}{2}$

Objective: (2.1) Understand the Graph of $y = \sin x$

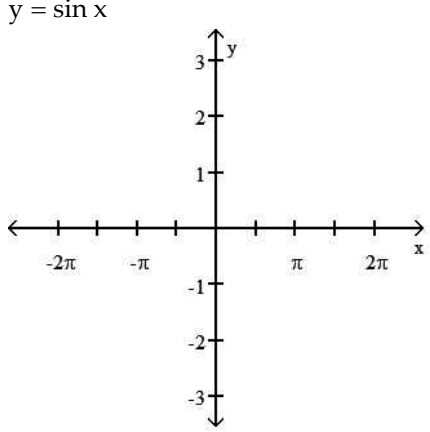
4) Period of $y = -\frac{1}{4} \sin x$

A) π B) $-\frac{1}{4}$ C) $\frac{\pi}{4}$ D) 2π

Objective: (2.1) Understand the Graph of $y = \sin x$

Graph the function.

5) $y = \sin x$



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