Exam

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Draw the angle.

1) $\frac{2\pi}{3}$ 1) _____

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

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

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

5) $\frac{7\pi}{4}$ 5) _____

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

6) 36° 6) _____

7) −60° 7) _____

8) 144° 8) _____

9) −135° 9) _____

10) 87° 10) _____

11) 6° 11) _____

Convert the angle in radians to degrees.

12) $\frac{8\pi}{5}$ 12) _____

13) $-\frac{7\pi}{6}$ 13) _____

14) $\frac{\pi}{4}$ 14) _____

15) $-\frac{\pi}{3}$ 15) _____

16) $\frac{5\pi}{8}$ 16) _____

17) $-\frac{13}{6}\pi$ 17) _____

18) $\frac{\pi}{6}$ 18) _____

19) $\frac{11\pi}{12}$ 19) _____

Find the exact value. Do not use a calculator.

20) $\sec\frac{\pi}{4}$ 20) _____

21) $\cos 45°$ 21) _____

22) $\csc 30°$ 22) _____

23) $\sin 60°$ 23) _____

24) $\tan\frac{\pi}{6}$ 24) _____

25) $\csc\frac{\pi}{3}$ 25) _____

Find the exact value of the expression if $\theta = 45°$. Do not use a calculator.

26) $f(\theta) = \csc\theta$ Find $f(\theta)$. 26) _____

27) $f(\theta) = \cos\theta$ Find $5f(\theta)$. 27) _____

28) $g(\theta) = \sin\theta$ Find $6g(\theta)$. 28) _____

Find the exact value of the expression if $\theta = 30°$. Do not use a calculator.

29) $f(\theta) = \tan\theta$ Find $f(\theta)$. 29) _____

30) $g(\theta) = \sin\theta$ Find $g(2\theta)$. 30) _____

31) $g(\theta) = \sin\theta$ Find $10g(\theta)$. 31) _____

32) $f(\theta) = \cos\theta$ Find $7f(\theta)$. 32) _____

Find the exact value of the expression if $\theta = 60°$. Do not use a calculator.

33) $f(\theta) = \tan\theta$ Find $f(\theta)$. 33) _____

34) $f(\theta) = \sin\theta$ Find $4f(\theta)$. 34) _____

35) $g(\theta) = \cos\theta$ Find $11g(\theta)$. 35) _____

Find the exact value. Do not use a calculator.

36) $\cos\frac{16\pi}{3}$ 36) _____

37) $\sec\frac{19\pi}{4}$ 37) _____

38) $\sin 405°$ 38) _____

39) $\cot 390°$ 39) _____

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

40) $\sin 855°$ 40) _____

41) $\tan 390°$ 41) _____

42) $\csc 660°$ 42) _____

43) $\cot 570°$ 43) _____

44) $\sin\frac{5\pi}{3}$ 44) _____

45) $\tan\frac{7\pi}{6}$ 45) _____

46) $\tan\frac{-3\pi}{4}$ 46) _____

47) $\csc\frac{4\pi}{3}$ 47) _____

48) $\sec\frac{3\pi}{4}$ 48) _____

49) $\cot \frac{-11\pi}{6}$ 49) _____

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

50) $\cos \theta = \frac{4}{7}$, $\tan \theta < 0$ Find $\sin \theta$. 50) _____

51) $\sec \theta = \frac{9}{2}$, θ in quadrant IV Find $\tan \theta$. 51) _____

52) $\sin \theta = -\frac{2}{5}$, $\tan \theta > 0$ Find $\sec \theta$. 52) _____

53) $\csc \theta = -\frac{3}{2}$, θ in quadrant III Find $\cot \theta$. 53) _____

54) $\tan \theta = -\frac{10}{3}$, θ in quadrant II Find $\cos \theta$. 54) _____

55) $\cot \theta = -\frac{3}{2}$, $\cos \theta < 0$ Find $\csc \theta$. 55) _____

56) $\tan \theta = -\frac{20}{21}$, $90° < \theta < 180°$ Find $\cos \theta$. 56) _____

57) $\cos \theta = \frac{20}{29}$, $\frac{3\pi}{2} < \theta < 2\pi$ Find $\cot \theta$. 57) _____

58) $\sin \theta = \frac{1}{2}$, $\sec \theta < 0$ Find $\cos \theta$ and $\tan \theta$. 58) _____

Name the quadrant in which the angle θ lies.

59) $\tan \theta > 0$, $\sin \theta < 0$ 59) _____

60) $\cos \theta < 0$, $\csc \theta < 0$ 60) _____

61) $\sin \theta > 0$, $\cos \theta < 0$ 61) _____

62) $\cot \theta < 0$, $\cos \theta > 0$ 62) _____

63) $\csc \theta > 0$, $\sec \theta > 0$ 63) _____

64) $\sec \theta < 0$, $\tan \theta < 0$ 64) _____

65) $\tan \theta < 0$, $\sin \theta < 0$ 65) _____

66) $\cos\theta > 0$, $\csc\theta < 0$ 66) _____

67) $\cot\theta > 0$, $\sin\theta < 0$ 67) _____

68) $\sin\theta > 0$, $\cos\theta > 0$ 68) _____

Find the reference angle of the given angle.

69) 23° 69) _____

70) 92° 70) _____

71) 406° 71) _____

72) -388° 72) _____

73) –19° 73) _____

74) -240° 74) _____

75) –517° 75) _____

76) $\frac{13\pi}{12}$ 76) _____

77) $\frac{3\pi}{4}$ 77) _____

78) $-\frac{9\pi}{8}$ 78) _____

79) $-\frac{5\pi}{6}$ 79) _____

80) $-\frac{42\pi}{8}$ 80) _____

Use the definition or identities to find the exact value of the indicated trigonometric function of the acute angle θ.

81) $\sin\theta = \frac{\sqrt{3}}{2}$ Find $\tan\theta$. 81) _____

82) $\sin\theta = \frac{5}{13}$ Find $\csc\theta$. 82) _____

83) $\cos\theta = \frac{3}{5}$ Find sec θ. 83) _____

84) $\cos\theta = \frac{\sqrt{3}}{2}$ Find cot θ. 84) _____

85) $\tan\theta = \frac{4}{3}$ Find sin θ. 85) _____

86) $\tan\theta = \frac{4}{3}$ Find cos θ. 86) _____

87) $\cot\theta = \frac{\sqrt{3}}{3}$ Find sin θ. 87) _____

88) $\sec\theta = \sqrt{10}$ Find csc θ. 88) _____

89) $\sec\theta = 2$ Find cot θ. 89) _____

90) $\csc\theta = \frac{5}{4}$ Find cos θ. 90) _____

The point P on the unit circle that corresponds to a real number t is given. Find the indicated trigonometric function.

91) $\left(\frac{5}{8}, \frac{\sqrt{39}}{8}\right)$ Find sin t. 91) _____

92) $\left(-\frac{\sqrt{11}}{6}, \frac{5}{6}\right)$ Find cos t. 92) _____

93) $\left(-\frac{\sqrt{7}}{4}, -\frac{3}{4}\right)$ Find sin t. 93) _____

94) $\left(\frac{5}{8}, -\frac{\sqrt{39}}{8}\right)$ Find csc t. 94) _____

95) $\left(\frac{2}{5}, -\frac{\sqrt{21}}{5}\right)$ Find cos t. 95) _____

96) $\left(\frac{3}{7}, -\frac{2\sqrt{10}}{7}\right)$ Find csc t. 96) _____

Solve the problem.

97) A surveyor is measuring the distance across a small lake. He has set up his transit on one side of the lake 150 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 55°. What is the distance between the piling and the pier to the nearest foot? 97) _____

98) A radio transmission tower is 120 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 25° with the ground? Give your answer to the nearest tenth of a foot. 98) _____

99) A building 170 feet tall casts a 70 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.) 99) _____

100) A photographer points a camera at a window in a nearby building forming an angle of 42° with the camera platform. If the camera is 52 m from the building, how high above the platform is the window, to the nearest hundredth of a meter? 100) _____

101) A tree casts a shadow of 26 meters when the angle of elevation of the sun is 24°. Find the height of the tree to the nearest meter. 101) _____

102) A twenty–five foot ladder just reaches the top of a house and forms an angle of 41.5° with the wall of the house. How tall is the house? Round your answer to the nearest 0.1 foot. 102) _____

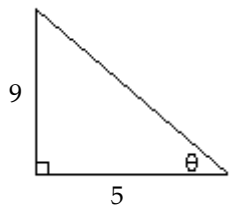
103) A surveyor is measuring the distance across a small lake. He has set up his transit on one side of the lake 90 feet from a piling that is directly across from a pier on the other side of the lake. From his transit, the angle between the piling and the pier is 40°. What is the distance between the piling and the pier to the nearest foot? 103) _____

104) A radio transmission tower is 250 feet tall. How long should a guy wire be if it is to be attached 13 feet from the top and is to make an angle of 32° with the ground? Give your answer to the nearest tenth of a foot. 104) _____

105) A building 270 feet tall casts a 90 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.) 105) _____

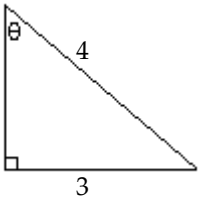
Find the value of the indicated trigonometric function of the angle θ in the figure. Give an exact answer with a rational denominator.

106) 106) _____



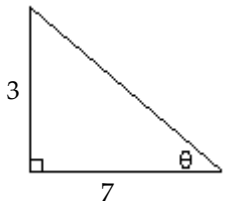
Find sin θ.

107) 107) _____



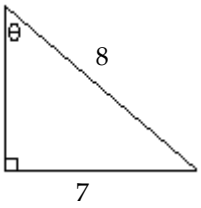
Find sin θ.

108) 108) _____



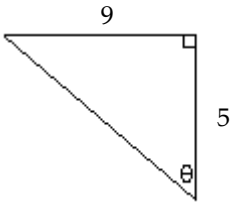
Find cos θ.

109) 109) _____



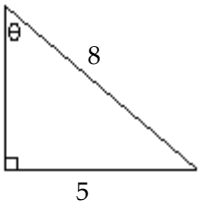
Find cos θ.

110) 110) _____



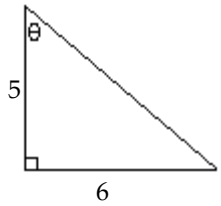
Find tan θ.

111) 111) _____



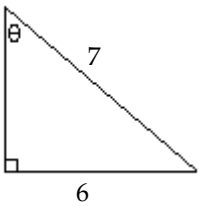
Find tan θ.

112) 112) _____



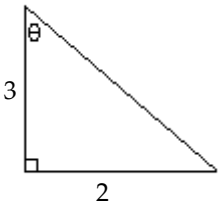
Find csc θ.

113) 113) _____



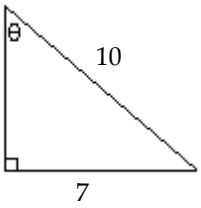
Find csc θ.

114) 114) _____



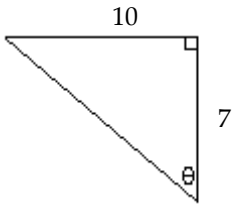
Find sec θ.

115) 115) _____



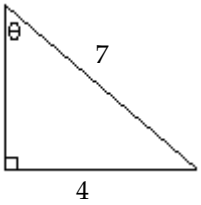
Find sec θ.

116) 116) _____



Find cot θ.

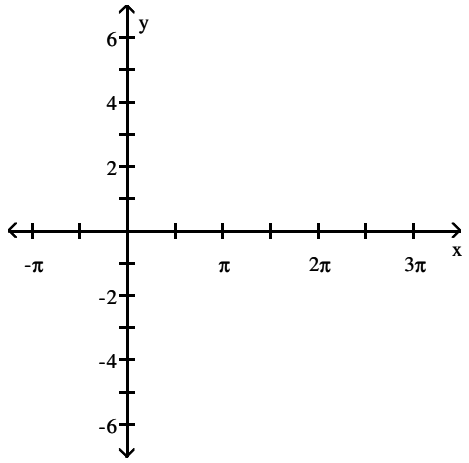
117) 117) _____



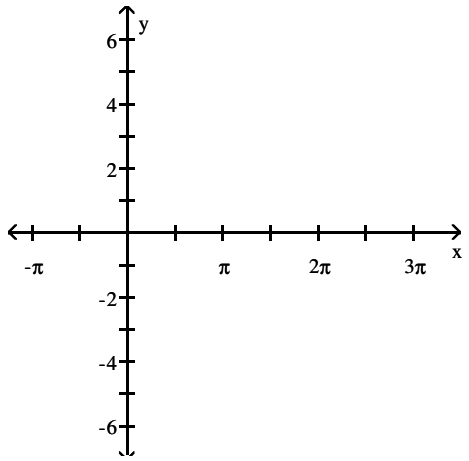
Find cot θ.

Use transformations to graph the function.

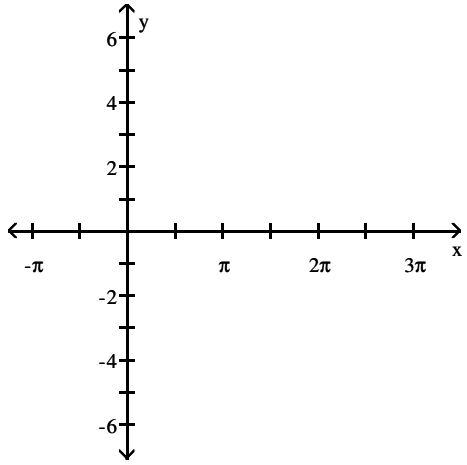
118) y = 4 sin x 118) _____



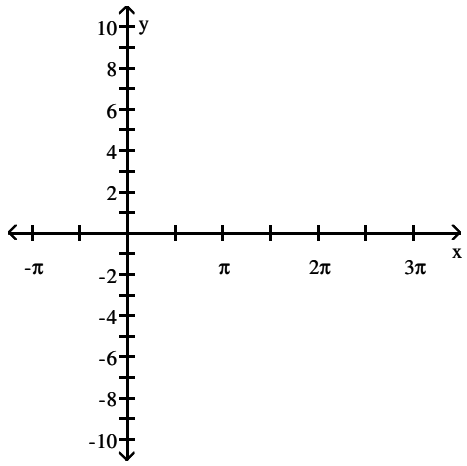
119) y = sin x + 3 119) _____



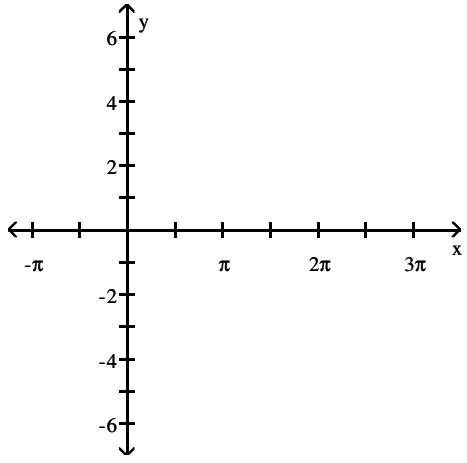
120) $y = -5 \sin x$ 120) _____



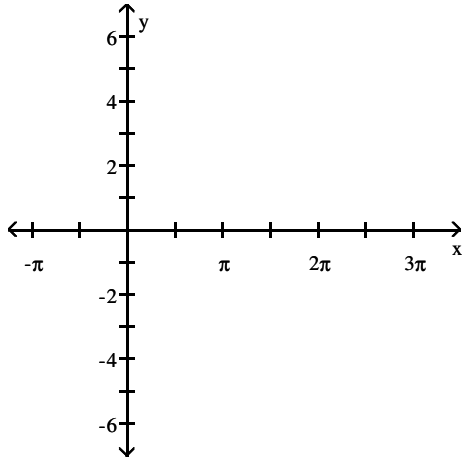
121) $y = 4 \sin x - 5$ 121) _____



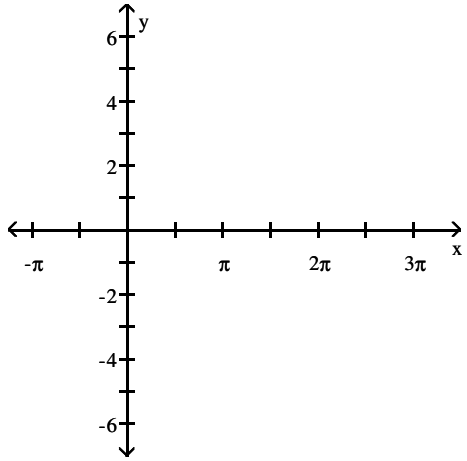
122) $y = 2 \cos x$ 122) _____



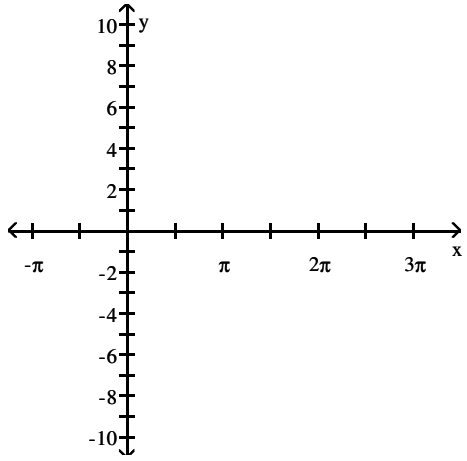
123) $y = \cos x - 4$ 123) _____



124) $y = -3 \cos x$ 124) _____



125) $y = 4 \cos x - 3$ 125) _____



Without graphing the function, determine its amplitude or period as requested.

126) $y = -5 \sin x$ Find the amplitude. 126) _____

127) $y = -3 \sin \frac{1}{2}x$ Find the amplitude. 127) _____

128) $y = 5 \sin 2x$ Find the amplitude. 128) _____

129) $y = 4 \cos \frac{1}{3}x$ Find the amplitude. 129) _____

130) $y = \frac{3}{4} \sin (-\frac{8\pi}{7}x)$ Find the amplitude. 130) _____

131) $y = \sin 5x$ Find the period. 131) _____

132) $y = \cos 5x$ Find the period. 132) _____

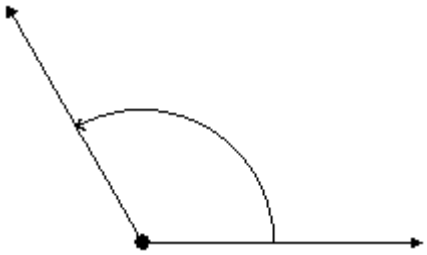
133) $y = 2 \cos \frac{1}{3}x$ Find the period. 133) _____

134) $y = 4 \cos x$ Find the period. 134) _____

135) $y = \frac{9}{4} \sin (-\frac{8\pi}{5}x)$ Find the period. 135) _____

Answer Key
Testname: TEST5_SAMPLE_PAPER_MTH166

1)



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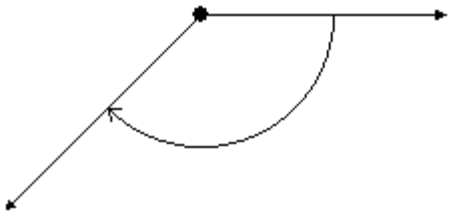

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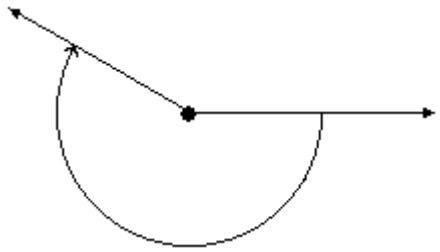

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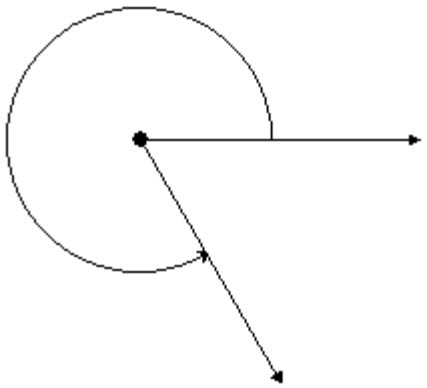
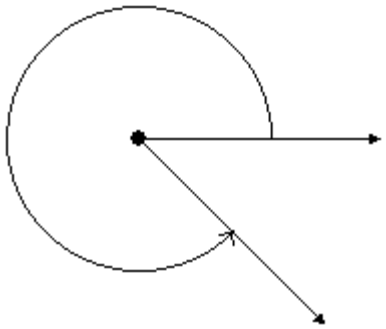


5)



6) $\frac{\pi}{5}$

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

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

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

10) $\frac{29\pi}{60}$

11) $\frac{\pi}{30}$

12) 288°

13) −210°

14) 45°

15) −60°

16) 113°

17) −390°

18) 30°

19) 165°

20) $\sqrt{2}$

21) $\frac{\sqrt{2}}{2}$

22) 2

23) $\frac{\sqrt{3}}{2}$

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

25) $\frac{2\sqrt{3}}{3}$

26) $\sqrt{2}$

27) $\frac{5\sqrt{2}}{2}$

28) $3\sqrt{2}$

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

30) $\frac{\sqrt{3}}{2}$

31) 5

32) $\frac{7\sqrt{3}}{2}$

33) $\sqrt{3}$

34) $2\sqrt{3}$

35) $\frac{11}{2}$

36) $-\frac{1}{2}$

37) $-\sqrt{2}$

38) $\frac{\sqrt{2}}{2}$

39) $\sqrt{3}$

40) $\frac{\sqrt{2}}{2}$

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

42) $-\frac{2\sqrt{3}}{3}$

43) $\sqrt{3}$

44) $-\frac{\sqrt{3}}{2}$

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

46) 1

47) $-\frac{2\sqrt{3}}{3}$

48) $-\sqrt{2}$

49) $\sqrt{3}$

50) $-\frac{\sqrt{33}}{7}$

51) $-\frac{\sqrt{77}}{2}$

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

53) $\frac{\sqrt{5}}{2}$

54) $-\frac{3\sqrt{109}}{109}$

55) $\frac{\sqrt{13}}{2}$

56) $-\frac{21}{29}$

57) $-\frac{20}{21}$

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

59) III

60) III

61) II

62) IV
63) I
64) II
65) IV
66) IV
67) III
68) I
69) 23°
70) 88°
71) 46°
72) 28°
73) 19°
74) 60°
75) 23°
76) $\frac{\pi}{12}$
77) $\frac{\pi}{4}$
78) $\frac{\pi}{8}$
79) $\frac{\pi}{6}$
80) $\frac{\pi}{4}$
81) $\sqrt{3}$
82) $\frac{13}{5}$
83) $\frac{5}{3}$
84) $\sqrt{3}$
85) $\frac{4}{5}$
86) $\frac{3}{5}$
87) $\frac{\sqrt{3}}{2}$
88) $\frac{\sqrt{10}}{3}$
89) $\frac{\sqrt{3}}{3}$
90) $\frac{3}{5}$
91) $\frac{\sqrt{39}}{8}$

92) $-\frac{\sqrt{11}}{6}$

93) $-\frac{3}{4}$

94) $-\frac{8\sqrt{39}}{39}$

95) $\frac{2}{5}$

96) $-\frac{7\sqrt{10}}{20}$

97) 214 ft

98) 250.8 ft

99) 22°

100) 46.82 m

101) 12 m

102) 18.7 ft

103) 76 ft

104) 447.2 ft

105) 18°

106) $\sin\theta = \frac{9\sqrt{106}}{106}$

107) $\frac{3}{4}$

108) $\cos\theta = \frac{7\sqrt{58}}{58}$

109) $\frac{\sqrt{15}}{8}$

110) $\tan\theta = \frac{9}{5}$

111) $\frac{5\sqrt{39}}{39}$

112) $\csc\theta = \frac{\sqrt{61}}{6}$

113) $\frac{7}{6}$

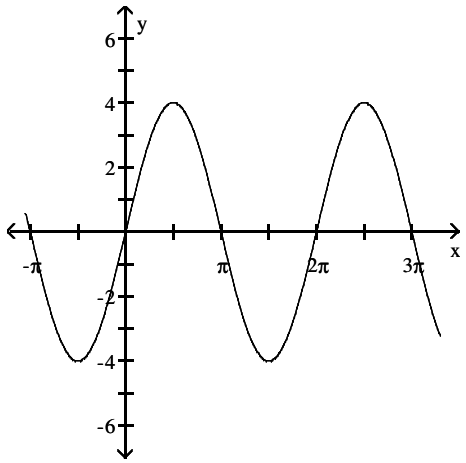
114) $\sec\theta = \frac{\sqrt{13}}{3}$

115) $\frac{10\sqrt{51}}{51}$

116) $\cot\theta = \frac{7}{10}$

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

118)



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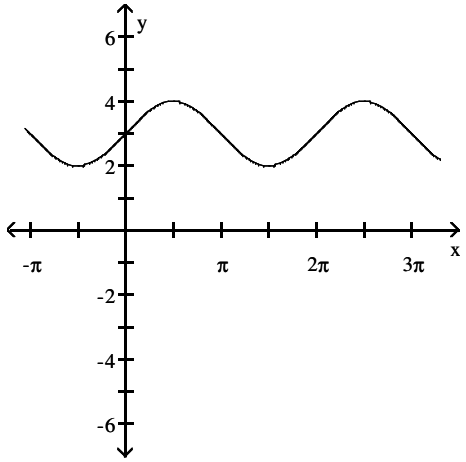

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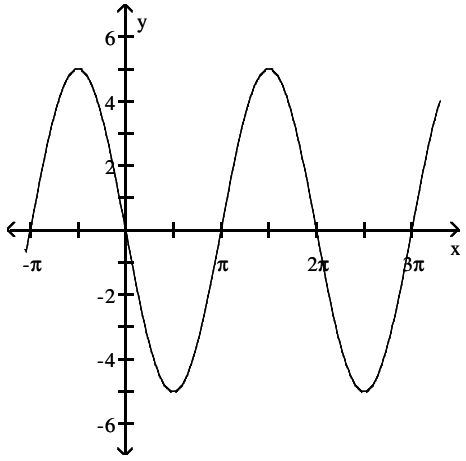
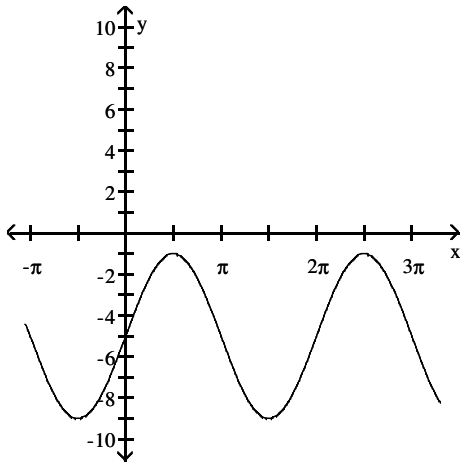
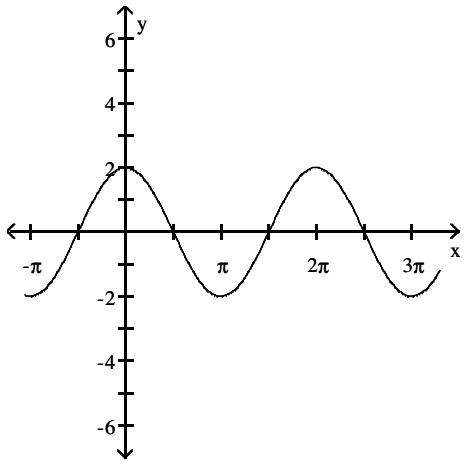


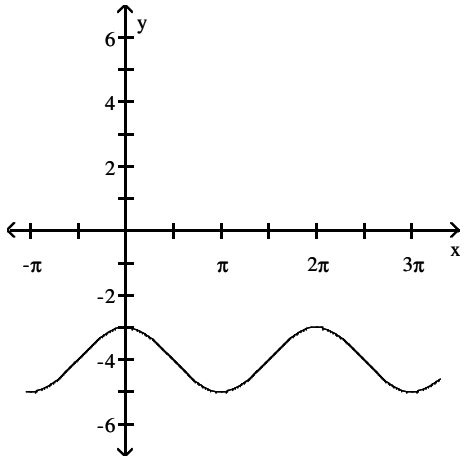
121)



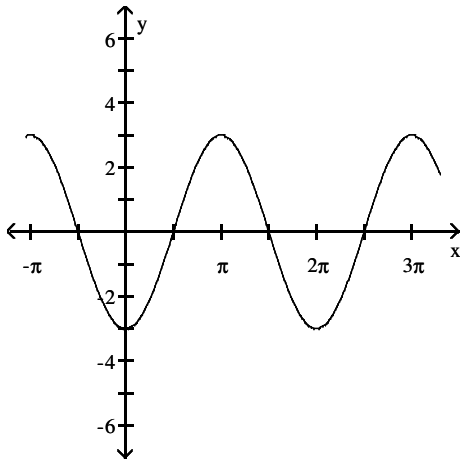
122)



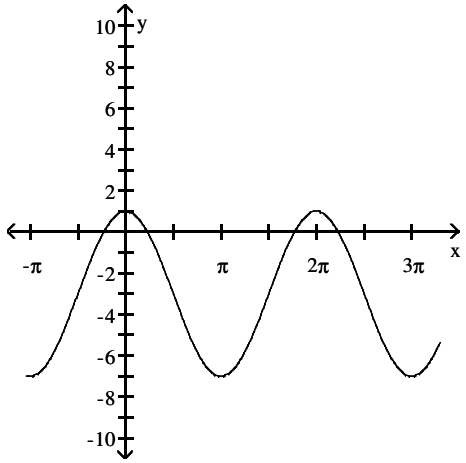
123)



124)



125)



126) 5

127) 3

128) 5

129) 4

130) $\frac{3}{4}$

131) $\frac{2\pi}{5}$

132) $\frac{2\pi}{5}$

133) 6π

134) 2π

135) $\frac{5}{4}$