# AC PreCalc Midterm Review Jan 2012

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Which of the following functions is represented by the graph below?
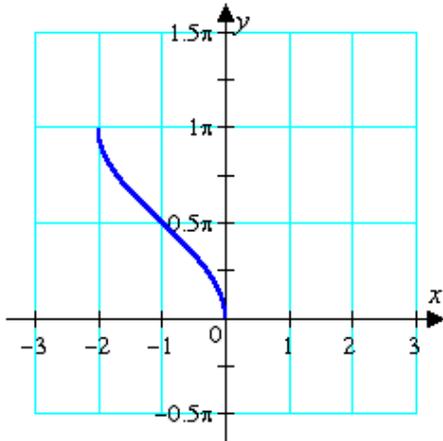
   a. $\arcsin 2x$ b. $2\arccos x$ c. $2\arcsin\dfrac{x}{2}$

   d. $\arccos(x+1)$ e. $\arccos\dfrac{x}{2}$

2. Which of the following is equivalent to the given expression?

   $$\dfrac{\sin^2 x}{1-\cos x}$$

   a. $\tan x \cot x - \cos x$ b. $\tan x + \sin x$
   c. $\cot x \sin x + \tan x$ d. $1 + \cos x$
   e. $\csc x + \cot x$

3. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

   $$(2-2\cos x)(2+2\cos x)$$

   a. $4\sin^2 x$ b. $\dfrac{4}{1+\cot^2 x}$ c. $4-4\cos^2 x$

   d. $4-\cos^2 x$ e. $\dfrac{4}{\csc^2 x}$

4. Factor; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

   $$\cot^2\alpha\tan^2\alpha+\cot^2\alpha$$

   a. $\dfrac{1}{\sin^2\alpha}$ b. $\dfrac{1}{1-\cos^2\alpha}$ c. $1+\cot^2\alpha$

   d. $\sec^2\alpha$ e. $\csc^2\alpha$

5. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

   $$\sin\alpha(\csc\alpha-\sin\alpha)$$

   a. $\dfrac{\csc^2\alpha-\sec^2\alpha+\tan^2\alpha}{\csc^2\alpha}$ b. $1-\sin^2\alpha$

   c. $1-\cot^2\alpha$ d. $\cos^2\alpha$ e. $\dfrac{\csc^2\alpha-1}{\csc^2\alpha}$

6. Which of the following functions is represented by the graph below?
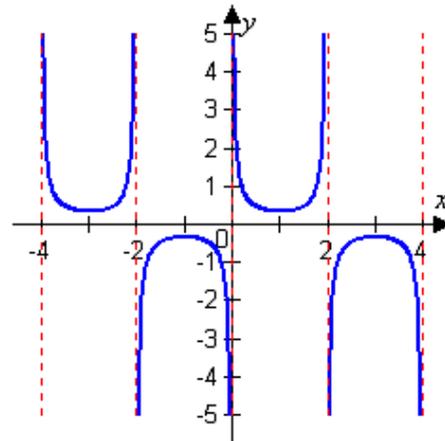


   a. $y=\tan\dfrac{x}{3}$ b. $y=\dfrac{1}{3}\csc\dfrac{\pi x}{2}$

   c. $y=\tan(x+\pi)$ d. $y=-3\csc\dfrac{\pi x}{2}$

   e. $y=\dfrac{1}{3}\cot\pi x$

7. Name the polar coordinates of the point graphed below.

$\frac{\pi}{2}$ ... π ... 5 ... 0 ... $\frac{3\pi}{2}$
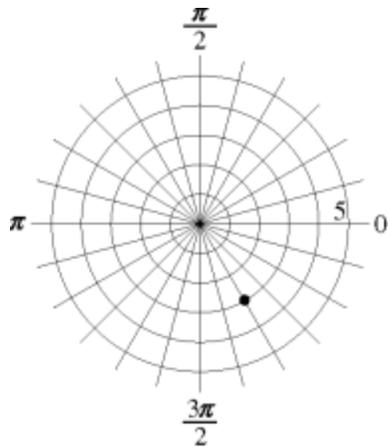
a. $\left(3, \dfrac{5\pi}{4}\right)$ b. $\left(3, \dfrac{5\pi}{3}\right)$ c. $\left(4, \dfrac{5\pi}{3}\right)$

d. $\left(4, \dfrac{5\pi}{4}\right)$

8. Determine which of the following is the polar equation for the given graph.
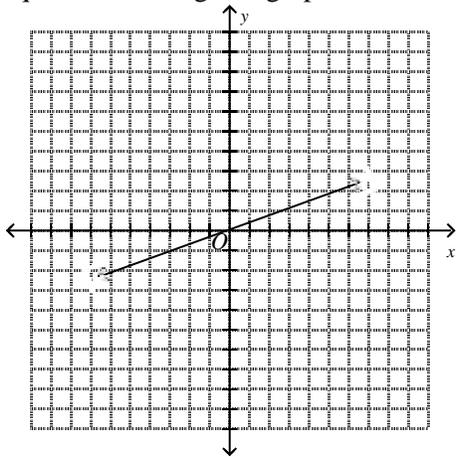
a. $r = 8$ b. $\theta = \dfrac{\pi}{10}$ c. $\theta = \dfrac{\pi}{9}$ d. $r = 9$

9. Graph the polar equation $r = 2 + 2\cos\theta$.

a.

b.

c.

d.
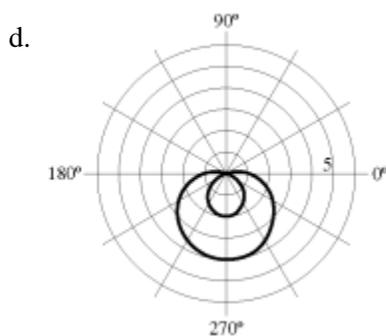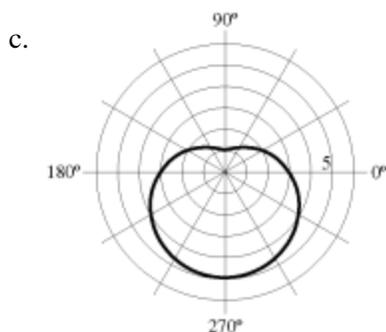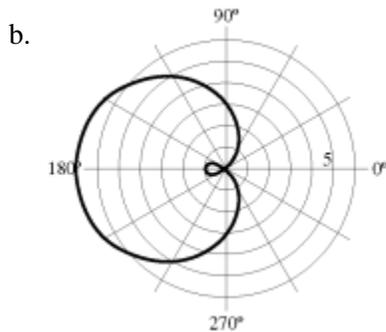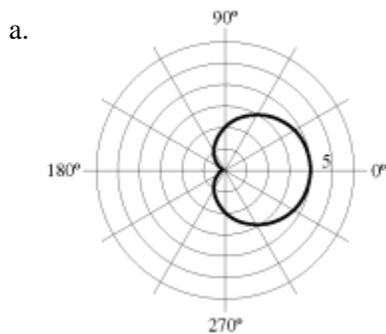
10. Find the polar coordinates of $(-7, -7)$ for $r > 0$.

a. $(7, \dfrac{5\pi}{4})$ b. $(7\sqrt{2}, \dfrac{5\pi}{4})$ c. $(-7\sqrt{2}, \dfrac{5\pi}{4})$

d. $(\dfrac{5\pi}{4}, 7\sqrt{2})$

11. Write the rectangular equation $(x + 7)^2 + y^2 = 49$ in polar form.

a. $r = 14 \cos \theta$ b. $r = -14 \sin \theta$ c. $r = \pm 7$
d. $r = -14 \cos \theta$

12. Write the polar equation in rectangular form.
$r = 4 \sin \theta$

Short Answer

13. Determine two coterminal angles (one positive and one negative) for $\theta = \dfrac{3\pi}{4}$.

14. Rewrite $675°$ in radian measure as a multiple of π.

15. Rewrite $-\dfrac{7\pi}{18}$ in degree measure.

16. Convert $38°51'37''$ to degree-decimal form. Round answer to three decimal places.

17. Convert $329.474°$ to $D°\,M'\,S''$ form.

18. Find the length of the arc, S, on a circle of radius 3 meters intercepted by a central angle of $210°$. Round to two decimal places.

19. Find the radian measure of the central angle of the circle of radius 6 centimeters that intercepts an arc of length 32 centimeters.

20. Find the area of the sector of the circle with radius 2 meters and central angle $\dfrac{11\pi}{6}$.

21. A car is traveling along Route 66 at a rate of 75 miles per hour, and the diameter of its wheels are 2.4 feet. Find the number of revolutions per minute the wheels are turning. Round answer to one decimal place.

22. Find the point (x, y) on the unit circle that corresponds to the real number $t = \dfrac{\pi}{4}$. Use your results to evaluate $\tan t$.

23. Find the point (x, y) on the unit circle that corresponds to the real number $t = \dfrac{5\pi}{6}$. Use your results to evaluate $\cos t$.

24. Given $\sin 30° = \dfrac{1}{2}$ and $\cos 30° = \dfrac{\sqrt{3}}{2}$, determine the following:

a. $y = x - 2$ b. $(x - 2)^2 + y^2 = 4$ c. $y = -4x$
d. $x^2 + (y - 2)^2 = 4$

$\tan 30°$

25. Given $\sec \theta = \sqrt{10}$ and $\tan \theta = 3$, determine the following.
$\cot(90° - \theta)$

26. Use a calculator to evaluate $\tan 111°48'$. Round your answer to four decimal places.

27. If $\sin \theta = \dfrac{\sqrt{3}}{2}$, find the value of θ in degrees $(0 < \theta < 90°)$ without the aid of a calculator.

28. Using the figure below, if $\theta = 16°$ and $y = 17$, determine the exact value of r.
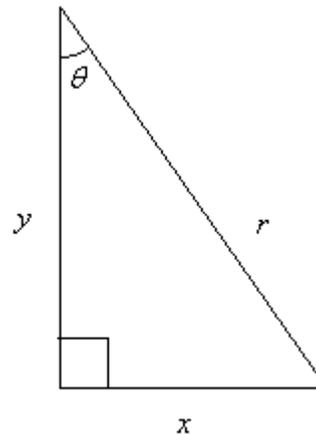
29. Given the figure below, determine the value of $\sin \theta$.

(−7,−24)

32. Use a calculator to evaluate $\tan 335°$. Round your answer to four decimal places.

33. Determine the exact value of $\sin(-315°)$.

34. Given the equation below, determine two solutions such that $0 \le \theta < 2\pi$.

$$\sec \theta = -2$$

35. Sketch the graph of the function below, being sure to include at least two full periods.

$$y = \sin\left(x + \frac{\pi}{4}\right)$$
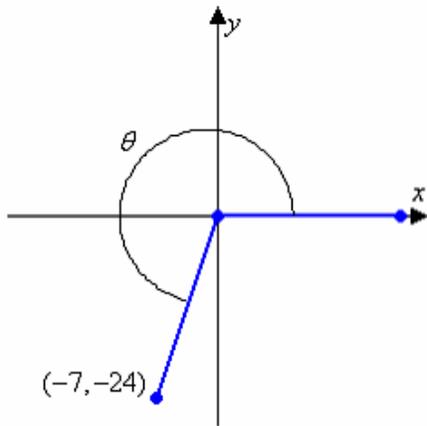
30. The point $(-5,-12)$ is on the terminal side of an angle in standard position. Determine the exact value of $\sec \theta$.

31. State the quadrant in which θ lies if $\tan\theta > 0$ and $\cos\theta > 0$.

36. Sketch the graph of the function below, being sure to include at least two full periods.

$$y = 2\cos\left(x - \frac{\pi}{2}\right)$$

37. Graph the function below. Be sure to include at least two full periods.

$$y = 3\cos(x + 3\pi) + 2$$

38. Sketch the graph of the given function. Make sure to include at least two periods.

$$y = -3\sec(x + \pi)$$

39. Graph the function below, making sure to show at least two periods.

$$\tan \frac{x}{4}$$

40. Evaluate $\arccos \dfrac{\sqrt{3}}{2}$ without using a calculator.

41. Evaluate $\tan^{-1}\left(-\dfrac{\sqrt{3}}{3}\right)$ without using a calculator.

42. Use a calculator to evaluate $\arccos 0.56$. Round your answer to two decimal places.

43. Use a calculator to evaluate $\tan^{-1}(-0.87)$. Round your answer to two decimal places.

44. Use an inverse function to write θ as a function of x.

46. Graph the function below.
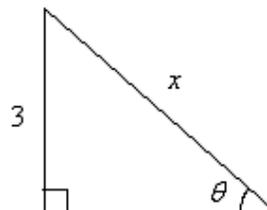
45. Find the exact value of $\csc\left(\arctan \dfrac{11}{60}\right)$.

$$y = -2 + \arctan\left(\frac{x}{2}\right)$$

47. The angle of elevation of the sun is $34°$. Find the length, l, of a shadow cast by a tree that is 53 feet tall. Round answer to two decimal places.

48. A communications company erects a 100-foot tall cellular telephone tower on level ground. Determine the angle of depression, θ (in degrees), from the top of the tower to a point 43 feet from the base of the tower. Round answer to two decimal places.

49. A jet is traveling at 650 miles per hour at a bearing of $55°$. After flying for 1.3 hours in the same direction, how far north will the plane have traveled? Round answer to nearest mile.

50. A plane is 48 miles west and 49 miles north of an airport. The pilot wants to fly directly to the airport. What bearing should the pilot take? Answer should be given in degrees and minutes.

51. A land developer wants to find the distance across a small lake in the middle of his proposed development. The bearing from A to B is $N\,14°W$. The developer leaves point A and travels 53 yards perpendicular to $\overline{AB}$ to point C. The bearing from C to point B is $N\,76°W$. Determine the distance, AB, across the small lake. Round distance to nearest yard.
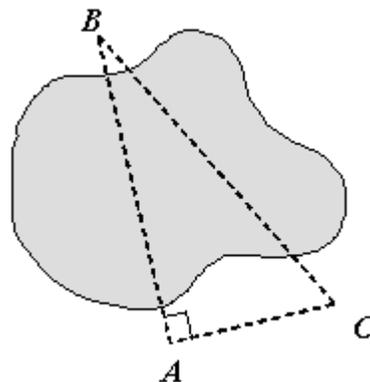
54. Solve the following equation.
$$2\sin x - 1 = 0$$

55. Solve the following equation.
$$\sin^2 x + \sin x = 0$$

56. Find the exact value of the given expression.
$$\sin\left(\frac{5\pi}{3} - \frac{5\pi}{4}\right)$$

57. Find the exact value of the given expression using a sum or difference formula.
$$\cos\frac{11\pi}{12}$$

52. If $\sin x = \frac{1}{2}$ and $\cos x = \frac{\sqrt{3}}{2}$, evaluate the following function.

$\tan x$

53. Use the cofunction identities to evaluate the expression below without the aid of a calculator.
$$\cos^2 63° + \cos^2 49° + \cos^2 27° + \cos^2 41°$$

58. Write the given expression as the sine of an angle.
$$\sin 105° \cos 35° + \sin 35° \cos 105°$$

59. Find the exact value of $\sin(u+v)$ given that $\sin u = \frac{7}{25}$ and $\cos v = -\frac{12}{13}$. (Both u and v are in Quadrant II.)

60. Simplify the given expression algebraically.

$$\cos\left(\frac{\pi}{2}+x\right)$$

61. Use the figure below to determine the exact value of the given function.

$\csc 2\theta$
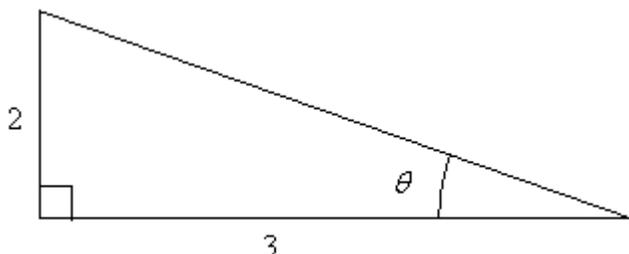
62. Use a double angle formula to rewrite the given expression.

$$6\cos^2 x - 3$$

63. Use a double-angle formula to find the exact value of $\cos 2u$ when
$\sin u = \dfrac{7}{25}$, where $\dfrac{\pi}{2} < u < \pi$.

64. Given $C = 113°$, $B = 41°$, and $c = 15$, use the Law of Sines to solve the triangle for the value of a. Round answer to two decimal places.

65. Given $A = 14°$, $B = 46°$, and $c = 15$, use the Law of Sines to solve the triangle for the value of b. Round answer to two decimal places.

66. Given $C = 115°$, $a = 19.9$, and $c = 15.3$, use the Law of Sines to solve the triangle (if possible) for the value of b. If two solutions exist, find both. Round answer to two decimal places.

67. Given $C = 25°$, $a = 32.34$, and $c = 14$, use the Law of Sines to solve the triangle (if possible) for the value of b. If two solutions exist, find both. Round answer to two decimal places.

68. Given $A = 16°$, $b = 12$, and $a = 10$, use the Law of Sines to solve the triangle (if possible) for the value of c. If two solutions exist, find both. Round answer to two decimal places.

69. Determine the area of a triangle having the following measurements. Round your answer to two decimal places.
$A = 118°$, $b = 7$, and $c = 10$

70. Determine the area of a triangle having the following measurements. Round your answer to two decimal places.
$b = 83°22'$, $a = 6$, and $c = 8$

71. After a severe storm, three sisters, April, May, and June, stood on their front porch and noticed that the tree in their front yard was leaning $6°$ from vertical toward the house. From the porch, which is 98 feet away from the base of the tree, they noticed that the angle of elevation to the top of the tree was $24°$. Approximate the height of the tree. Round answer to two decimal places.

72. A straight road makes an angle, A, of $19°$ with the horizontal. When the angle of elevation, B, of the sun is $57°$, a vertical pole beside the road casts a shadow 8 feet long parallel to the road. Approximate the length of the pole. Round answer to two decimal places.

78. Find the standard form of the equation of the parabola and determine the coordinates of the focus.

$(1, -4)$
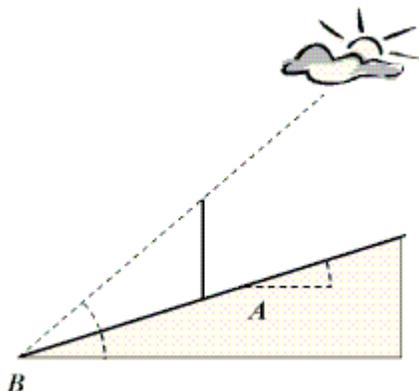
73. A park ranger at point A observes a fire in the direction $N\,25°36'E$. Another ranger at point B, 5 miles due east of A, sites the same fire at $N\,56°19'W$. Determine the distance from point B to the fire. Round answer to two decimal places.

74. Given $a = 6$, $b = 11$, and $c = 9$, use the Law of Cosines to solve the triangle for the value of A. Round answer to two decimal places.

75. Given $a = 7.6$, $b = 9.2$, and $c = 5.3$, use Heron's Area Formula to find the area of $\triangle ABC$. Round answer to two decimal places.

76. Two ocean liners leave from the same port in Puerto Rico at 10:00 a.m. One travels at a bearing of $N45°W$ at 15 miles per hour, and the other travels at a bearing of $S58°W$ at 17 miles per hour. Approximate the distance between them at noon the same day. Round answer to two decimal places.

77. A vertical pole 29 feet tall stands on a hillside that makes an angle of $16°$ with the horizontal. Determine the approximate length of cable that would be needed to reach from the top of the pole to a point 78 feet downhill from the base of the pole. Round answer to two decimal places.

79. Find the standard form of the equation of the parabola with the given characteristic and vertex at the origin.

directrix: $x = 1$

80. Find the vertex and focus of the parabola.

$$y^2 = -\frac{9}{8}x$$

81. Find the vertex and focus of the parabola.

$$(y-2)^2 + 16(x-3) = 0$$

82. Give the standard form of the equation of the parabola with the given characteristics.

vertex: (–3, 1)   focus: (–1, 1)

83. Find the standard form of the equation of the ellipse with the given characteristics.

vertices: (–9, 0), (–9, 16)   minor axis of length 4

84. Find the standard form of the equation of the ellipse with the following characteristics.

foci: $(\pm 4, 0)$ major axis of length: 12

85. Find the standard form of the equation of the ellipse with the given characteristics.

    foci: $(4,3),(4,13)$ endpoints of the major axis: $(4,0),(4,16)$

86. Find the standard form of the equation of the ellipse with the given characteristics.

    foci: $(-4,-9), (-4,-3)$ endpoints of the major axis: $(-4,-14), (-4,2)$

87. Find the center and vertices of the ellipse.

$$\frac{x^2}{49} + \frac{y^2}{4} = 1$$

88. Find the center and foci of the ellipse.

$$\frac{(x+5)^2}{5} + \frac{(y+9)^2}{9}$$

89. Identify the conic by writing the equation in standard form.

$$10y^2 - 20x^2 + 60y + 160x - 255 = 0$$

90. Find the center and vertices of the ellipse.

$$4x^2 + 9y^2 - 24x + 72y + 144 = 0$$

91. Find the center and the vertices of the ellipse.

$$16x^2 + 4y^2 = 64$$

92. Find the center and foci of the ellipse.

$$\frac{(x-8)^2}{65} + \frac{(y-2)^2}{81} = 1$$

93. Find the center and vertices of the ellipse.

$$x^2 + 9y^2 + 16x - 54y + 136 = 0$$

94. Find the standard form of the equation of the ellipse with vertices $(0,\pm5)$ and eccentricity $e = \frac{4}{5}$.

95. Find the vertices and asymptotes of the hyperbola.

$$\frac{x^2}{36} + \frac{y^2}{49} = 1$$

96. Find the center and foci of the hyperbola.

$$\frac{(y+4)^2}{36} - \frac{(x+1)^2}{28} = 1$$

97. Find the center and vertices of the hyperbola.

$$11x^2 - 25y^2 + 22x + 250y - 889 = 0$$

98. Find the standard form of the equation of the hyperbola with the given characteristics.

    vertices: $(0,\pm6)$ foci: $(0,\pm7)$

99. Find the standard form of the equation of the hyperbola with the given characteristics.

    vertices: $(-2, -4), (-2, 6)$ foci: $(-2, -5), (-2, 7)$

100. Find the standard form of the equation of the hyperbola with the given characteristics.

    vertices: $(0, -1), (10, -1)$ asymptotes: $y = \frac{3}{5}x - 4, y = -\frac{3}{5}x - 4$

AC PreCalc Midterm Review Jan 2012
Answer Section

MULTIPLE CHOICE

1. ANS: D   PTS: 1   OBJ: Use graphing utilities to graph inverse trig functions
2. ANS: D   PTS: 1   OBJ: Use fundamental identities to determine equivalent expression
3. ANS: D   PTS: 1   OBJ: Use fundamental identities to determine equivalent expression
4. ANS: D   PTS: 1   OBJ: Use fundamental identities to determine equivalent expression
5. ANS: C   PTS: 1   OBJ: Use fundamental identities to determine equivalent expression
6. ANS: B   PTS: 1   OBJ: Determine function given graph
7. ANS: B   PTS: 1   OBJ: 9-1.1 Graph points in polar coordinates.
    STA: MI II.2.1 | MI V.2.2 | MI II.2   TOP: Graph points in polar coordinates.
    KEY: Polar Coordinates | Graph Points
8. ANS: C   PTS: 1   OBJ: 9-1.2 Graph simple polar equations.
    STA: MI II.2.1 | MI V.2.2 | MI II.2   TOP: Graph simple polar equations.
    KEY: Polar Equations | Graph Polar Equations
9. ANS: A   PTS: 1   OBJ: 9-2.1 Graph polar equations.
    NAT: NCTM GM.2a | NCTM GM.2   STA: MI II.2.1 | MI V.2.2 | MI II.2
    TOP: Graph polar equations.   KEY: Polar Equations | Graph Polar Equations
10. ANS: B   PTS: 1
    OBJ: 9-3.1 Convert from rectangular coordinates to polar coordinates.
    NAT: NCTM GM.2a | NCTM GM.2   STA: MI II.2.1 | MI V.2.2 | MI II.2
    TOP: Convert from rectangular coordinates to polar coordinates.
    KEY: Rectangular Coordinates | Polar Coordinates
11. ANS: D   PTS: 1   OBJ: 9-3.3 Write rectangular equations in polar form.
    NAT: NCTM AL.2a | NCTM GM.2a | NCTM AL.2   STA: MI V.2.2
    TOP: Write rectangular equations in polar form.   KEY: Rectangular Equations | Polar Form
12. ANS: D   PTS: 1   OBJ: 9-3.4 Write polar equations in rectangular form.
    NAT: NCTM AL.2a | NCTM GM.2a | NCTM AL.2   STA: MI V.2.2
    TOP: Write polar equations in rectangular form.   KEY: Polar Equations | Rectangular Form

SHORT ANSWER

13. ANS:
$$\frac{11\pi}{4}, -\frac{5\pi}{4}$$

    PTS: 1   OBJ: Determine two coterminal angles (radians)
14. ANS:
$$\frac{15\pi}{4}$$

    PTS: 1   OBJ: Convert degree measure to radian measure
15. ANS:
$-70°$

    PTS: 1   OBJ: Convert radian measure to degree measure

16. ANS:
    38.860°

    PTS: 1   OBJ: Convert degrees, minutes and seconds to decimal degree

17. ANS:
    329° 28′ 26″

    PTS: 1   OBJ: Convert decimal degree to DMS form

18. ANS:
    $S = 11.00$ meters

    PTS: 1   OBJ: Find length of arc given radius and central angle

19. ANS:
    $\theta = \dfrac{16}{3}$

    PTS: 1   OBJ: Find measure of central angle given radius and arc length

20. ANS:
    $A = \dfrac{11\pi}{3}\, \text{m}^2$

    PTS: 1   OBJ: Find the area of a sector given the radius and central angle

21. ANS:
    875.4 rpm

    PTS: 1   OBJ: Determine revolutions per minute

22. ANS:
    $\tan t = 1$

    PTS: 1   OBJ: Evaluate trig function using unit circle

23. ANS:
    $\cos t = -\dfrac{\sqrt{3}}{2}$

    PTS: 1   OBJ: Evaluate trig function using unit circle

24. ANS:
    $\tan 30° = \dfrac{\sqrt{3}}{3}$

    PTS: 1   OBJ: Determine trig value given sin and cos

25. ANS:
    $\cot(90° - \theta) = 3$

    PTS: 1   OBJ: Determine trig value given sec and tan

26. ANS:
    −2.5002

    PTS: 1   OBJ: Evaluate trig values using calculator

27. ANS:
$\theta = 60°$

    PTS: 1   OBJ: Determine theta without the use of calculator

28. ANS:
$$r = \frac{17}{\cos 16°}$$

    PTS: 1   OBJ: Determine value of variable using right-triangle trig

29. ANS:
$$\sin \theta = -\frac{24}{25}$$

    PTS: 1   OBJ: Determine trig value from diagram

30. ANS:
$$\sec \theta = -\frac{13}{5}$$

    PTS: 1   OBJ: Determine value of trig function given point on terminal side

31. ANS:
Quadrant I

    PTS: 1   OBJ: Determine quadrant given constraints

32. ANS:
–0.4663

    PTS: 1   OBJ: Calculate the value of a trigonometric function using a calculator

33. ANS:
$$\frac{\sqrt{2}}{2}$$

    PTS: 1   OBJ: Determine exact trig value of angle

34. ANS:
$$\theta = \frac{2\pi}{3}, \frac{4\pi}{3}$$

    PTS: 1   OBJ: Solve trig equations

35. ANS:
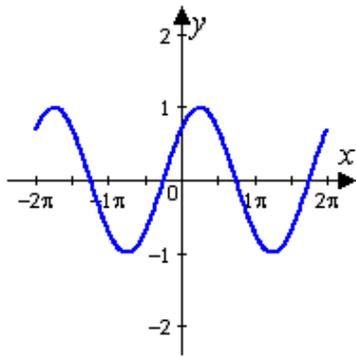
PTS: 1   OBJ: Sketch graphs of trig functions

36. ANS:
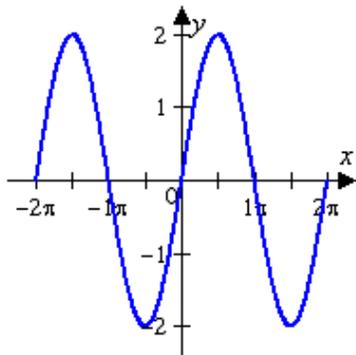
PTS: 1   OBJ: Sketch graphs of trig functions

37. ANS:
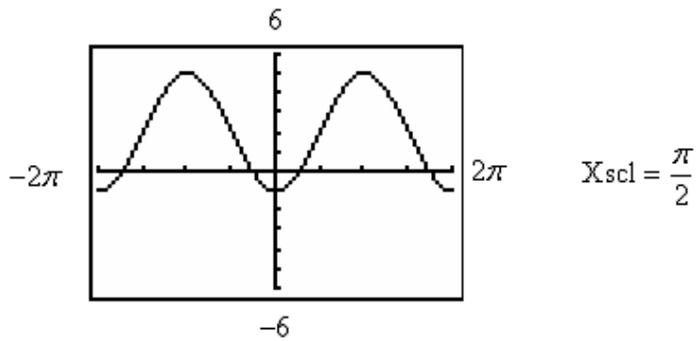
PTS: 1   OBJ: Use graphing utilities to graph trig functions

38. ANS:
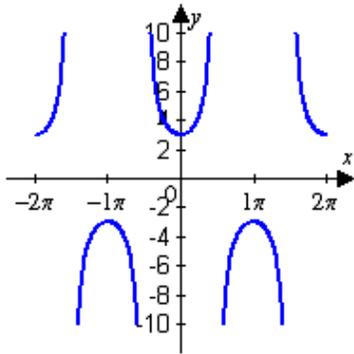
PTS: 1   OBJ: Sketch graphs of trig functions

39. ANS:

$$X\text{scl} = \frac{\pi}{2}$$
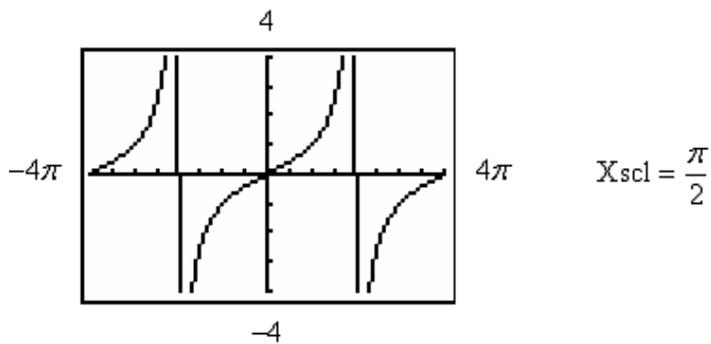
PTS: 1   OBJ: Use graphing utilities to graph trig functions

40. ANS:

$$\frac{\pi}{6}$$

PTS: 1   OBJ: Determine value of inverse trig function without a calculator

41. ANS:

$$-\frac{\pi}{6}$$

PTS: 1   OBJ: Determine value of inverse trig function without a calculator

42. ANS:

0.98

PTS: 1   OBJ: Evaluate inverse functions

43. ANS:

−0.72

PTS: 1   OBJ: Evaluate inverse functions

44. ANS:

$$\theta = \arcsin \frac{x}{3}$$

PTS: 1   OBJ: Rewrite theta as an inverse function involving x

45. ANS:

$$\frac{61}{11}$$

PTS: 1   OBJ: Find the exact value of an expression involving inverse function

46. ANS:
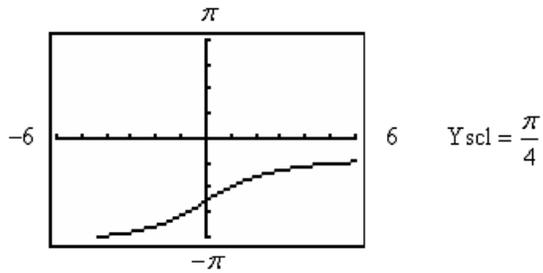
PTS: 1   OBJ: Use graphing utilities to graph inverse trig functions

47. ANS:

$l = 78.58$ feet

PTS: 1   OBJ: Application: Angle of elevation

48. ANS:

66.73°

PTS: 1   OBJ: Application: Angle of depression

49. ANS:

485 miles north

PTS: 1   OBJ: Application: Aviation and distance

50. ANS:

135° 35'

PTS: 1   OBJ: Find bearings

51. ANS:

28 yards

PTS: 1   OBJ: Find distance using surveying bearings

52. ANS:

$$\tan x = \frac{\sqrt{3}}{3}$$

PTS: 1   OBJ: Evaluate trig function given other trig values

53. ANS:

2

PTS: 1   OBJ: Evaluate expressions using co-functions

54. ANS:

$$x = \frac{\pi}{6} + 2n\pi \text{ and } x = \frac{5\pi}{6} + 2n\pi, \text{ where } n \text{ is an integer}$$

PTS: 1   OBJ: Solve trig equations

55. ANS:

$$x = n\pi \text{ and } x = \frac{3\pi}{4} + n\pi, \text{ where } n \text{ is an integer}$$

PTS: 1   OBJ: Solve trig equations

56. ANS:

$$\frac{\sqrt{3}+1}{2\sqrt{2}}$$

PTS: 1   OBJ: Find exact value of expression using sum formula

57. ANS:

$$\frac{-\sqrt{3}-1}{2\sqrt{2}}$$

PTS: 1   OBJ: Find exact value of expression using sum or difference formula

58. ANS:

$$\sin(140°)$$

PTS: 1   OBJ: Rewrite an expression using a sum or difference formula

59. ANS:

$$\sin(u+v) = -\frac{204}{325}$$

PTS: 1   OBJ: Find exact value of expression using sum or difference formula with constraints

60. ANS:

$$-\sin x$$

PTS: 1   OBJ: Simplify trig expressions using addition and subtraction formulas

61. ANS:

$$\csc 2\theta = \frac{13}{12}$$

PTS: 1   OBJ: Find exact value of trig function from diagram

62. ANS:

$$3\cos 2x$$

PTS: 1   OBJ: Rewrite an expression as a double angle

63. ANS:

$$\cos 2u = \frac{527}{625}$$

PTS: 1   OBJ: Find exact value of double angle given quadrant restraints

64. ANS:

$a = 7.14$

PTS: 1   OBJ: Solve triangles using the Law of Sines (AAS)

65. ANS:
$a = 12.46$

PTS: 1   OBJ: Solve triangles using the Law of Sines (ASA)

66. ANS:
not possible

PTS: 1   OBJ: Solve triangles using the Law of Sines (SSA - 0 sol)

67. ANS:
$b = 32.34$

PTS: 1   OBJ: Solve triangles using the Law of Sines (SSA- 1 sol)

68. ANS:
$c = 2.10 \text{ and } 20.97$

PTS: 1   OBJ: Solve triangles using the Law of Sines (SSA- 2 sol)

69. ANS:
30.90 sq. units

PTS: 1   OBJ: Find the area of an oblique triangle

70. ANS:
23.84 sq. units

PTS: 1   OBJ: Find the area of an oblique triangle

71. ANS:
41.91 feet

PTS: 1   OBJ: Application: Law of Sines

72. ANS:
9.04 feet

PTS: 1   OBJ: Application: Law of Sines

73. ANS:
4.55 miles

PTS: 1   OBJ: Application: Law of Sines

74. ANS:
$33.03°$

PTS: 1   OBJ: Solve triangles using the Law of Cosines (SSS) - no figure

75. ANS:
20.21 sq. units

PTS: 1   OBJ: Use Heron's Formula to determine area of triangles

76. ANS:
39.96 miles

PTS: 1   OBJ: Application: Law of Cosines

77. ANS:
90.40 feet

PTS: 1   OBJ: Application: Law of Cosines

78. ANS:

$$x^2 = -\frac{1}{4}y \qquad \text{focus: } \left(0, -\frac{1}{16}\right)$$

PTS: 1   REF: 213   OBJ: Find the standard form of a parabola with a vertex at the origin

79. ANS:
$$y^2 = -4x$$

PTS: 1   REF: 212   OBJ: Find the standard form of a parabola with a vertex at the origin

80. ANS:

$$\text{vertex: } (0, 0) \qquad \text{focus: } \left(-\frac{9}{32}, 0\right)$$

PTS: 1   REF: 209   OBJ: Find the vertex and focus of a parabola

81. ANS:
$$\text{vertex: } (3, 2) \qquad \text{focus: } (-1, 2)$$

PTS: 1   REF: 234   OBJ: Find the vertex and focus of a parabola

82. ANS:
$$\left(y - 1\right)^2 = 8(x + 3)$$

PTS: 1   REF: 238   OBJ: Find the standard form of a parabola

83. ANS:
$$\frac{x + 9^2}{4} + \frac{y - 8^2}{64} = 1$$

PTS: 1

84. ANS:

$$\frac{x^2}{36} + \frac{y^2}{20} = 1$$

PTS: 1   REF: 219   OBJ: Find the standard form of a ellipse with a vertex at the origin

85. ANS:

$$\frac{x - 4^2}{39} + \frac{y - 8^2}{64} = 1$$

PTS: 1

86. ANS:

$$\frac{(x+4)^2}{55} + \frac{(y+6)^2}{64} = 1$$

PTS: 1   REF: 248   OBJ: Find equation of ellipse using center and foci

87. ANS:
center: (0, 0)   vertices: (–7, 0), (7, 0)

PTS: 1   REF: 216   OBJ: Find center and vertices of an ellipse centered at the origin

88. ANS:
center: $(-5,-9)$ foci: $(-5,-11), (-5,-7)$

PTS: 1   REF: 244   OBJ: Find center and foci of an ellipse

89. ANS:
$$\frac{(y+3)^2}{\frac{5}{2}} - \frac{(x-4)^2}{\frac{5}{4}} = 1; \text{hyperbola}$$

PTS: 1

90. ANS:
center: $(3,-4)$ vertices: $(0,-4), (6,-4)$

PTS: 1   REF: 245   OBJ: Find center and vertices of an ellipse

91. ANS:
center: (0, 0)   vertices: (0, –4), (0, 4)

PTS: 1   REF: 217   OBJ: Find center and vertices of an ellipse centered at the origin

92. ANS:
center: (8, 2)   foci: (8, –2), (8, 6)

PTS: 1

93. ANS:
center: (–8, 3)   vertices: (–11, 3), (–5, 3)

PTS: 1

94. ANS:
$$\frac{x^2}{9} + \frac{y^2}{25} = 1$$

PTS: 1   REF: 250   OBJ: Find the standard form of an ellipse using eccentricity

95. ANS:
vertices: $(\pm 6, 0)$ asymptote: $y = \pm\frac{7}{6}x$

PTS: 1   REF: 224
OBJ: Find vertices and asymptotes of a hyperbola centered at the origin

96. ANS:

center: (–1, –4), foci: (–1, –12), (–1, 4)

PTS: 1
97. ANS:
center: (–1, 5), vertices: (–6, 5), (4,5)

PTS: 1
98. ANS:
$$\frac{y^2}{36} - \frac{x^2}{13} = 1$$

PTS: 1   REF: 226
OBJ: Find the standard form of the equation of a hyperbola centered at the origin
99. ANS:
$$\frac{(y-1)^2}{25} - \frac{(x+2)^2}{11} = 1$$

PTS: 1
100. ANS:
$$\frac{(x-5)^2}{25} - \frac{(y+1)^2}{9} = 1$$

PTS: 1