**April 2015**

51. What are the values of θ, between 0 and 2π, when tanθ= -1?

1. π4/ and (3π)/4 only
2. (3π)/4 and (5π)/4 only
3. (3π)/4 and (7π)/4 only
4. (5π)/4 and (7π)/4 only
5. π/4, (3π)/4, (5π)/4, and (7π)/4

58. In the standard (x,y) coordinate plane below, B is on the positive x-axis, the measure of (angle)AOB is 150°, and the length of (line)AO is 1 coordinate unit. What are the coordinates of A? [PICTURE]

F. (-rad3/2, 1/2)

G. (-rad(2)/2, rad(2)/2

H. (-1/2, rad(3)/2)

J. (rad(3)/2, -1/2)

K. (rad(2)/2, -rad(2)/2)

59) Which of the following polar coordinates represent the same location as (3, 45°)?

1. (3, -315°)
2. (3, -225°)
3. (3, -45°)
4. (3, 135°)
5. (3, 315°)

**June 2015**

39. What is the amplitude of the function f(x) = ½cos(3x + π)?

A. 1/3

B. ½

C. 3/2

D. 2

E. 3

**April 2016**

38. The function f(x) = 0.25sin(4x) is graphed below for 0 ≤ x ≤ 2π. What is the period of the function? [PICTURE]

F. π/2

G. π/4

H. π/8

J. π

K. 2 π

**June 2016**

53. Green Camp and Blue Camp lie on opposite sides of Red Lake. A boat dock is located 1,000 yards from Green Camp. The campers estimated the angles between these 3 locations to be as shown on the map below. Using these estimates, which of the following expressions gives the distance, in yards, between Green Camp and Blue Camp?

\*\*\*\*\*picture\*\*\*\*\*

1. 5,000/11
2. 1,000/(cos20°)
3. 1,000/(sin110°)
4. [(1,000)(sin50°)]/(sin110°)
5. 1,000tan50°

56. In the standard (x,y) coordinate plane below, ϴ is the radian measure of any angle in standard position with the point (r,s) on the terminal side. Which of the following points is on the terminal side of the angle in standard position having radian measure π - ϴ? [PICTURE]

F. (-r, s)

G. (r, -s)

H. (-s, -r)

J. (-s, r)

K. (s, -r)

**December 2016**

14. Given that sin2x = 4/13, what is cos2x?

1. 4/9
2. 9/4
3. 9/13
4. 13/9
5. 13/4

26. Angle (angle)JKL is shown below with the given lengths in coordinate units. What is the measure of (angle)JKL in radians? [PICTURE]

1. 2/(3π)
2. 3/(2π)
3. π/3
4. (2π)/3
5. (4π)/3

42. Suspended from the ceiling is a weight on a large spring that is oscillating up and down. The distance, d inches, between the location of the center of the mass of the weight after t seconds and the weight’s equilibrium location at t = 0 is modeled by the function d = 5sin(4πt). What is the amplitude of the function?

F. 1/2

G. 2

H. 4

J. 5

K. 10

**June 2017**

42. For all x such that 0 ≤ x ≤ 90, which of the following expressions is NOT equal to sinx°?

1. -sin(-x°)
2. sin(-x°)
3. cos(90 - x)°
4. cos(x - 90)°
5. Rad (1 - (cosx°)2)

**April 2017**

54. One of the following graphs in the standard (x, y) coordinate plane is the graph of y = sin2x + cos2x over the domain –π/2 ≤ x ≤ π/2. Which one?

F. [PICTURE]

J. [PICTURE]

G. [PICTURE]

K. [PICTURE]

H. [PICTURE]

55. What is the period of the function f(x) = csc(4x)?

A. π

B. 2π

C. 4π

D. π/4

E. π/2

59. For -(π/2) ≤ θ ≤ (π/2), |sinθ| ≥ 1 is true for all and only the values of n in which of the following sets?

1. {(-π/2), (π/2)}
2. {π/2}
3. { θ | (-π/2) < θ < (π/2)}
4. { θ | (-π/2) ≤ θ ≤ (π/2)}
5. The empty set