Name_____

Circle your answer to problems 1-3. You must show your work to receive credit.

(7 pts) 1. Which of the following is coterminal with $-\frac{2\pi}{3}$?

A. $\frac{2\pi}{3}$

B. $\frac{\pi}{3}$

C. $-\frac{\pi}{3}$

D. $\frac{5\pi}{3}$

E. $-\frac{5\pi}{3}$

F. $\frac{4\pi}{3}$

G. $-\frac{4\pi}{3}$

(7 pts) 2. $(1 - \cos\theta)(1 + \cos\theta) =$

A. $1 + \cos^2\theta$

B. $1 - \sin^2\theta$

C. $-\cos^2\theta$

D. $-\sin^2\theta$

E. $\frac{1}{\sec^2\theta}$

F. $\frac{1}{\csc^2\theta}$

G. None of these

(7 pts) 3. If $\cos\theta < 0$ and $\sin\theta > 0$, then θ is any angle in quadrant(s)

A. I

B. I or II

C. II or III

D. III

E. I or IV

F. II

G. III or IV

Name_____

Circle your answer for problem 4. Place your answers to 5 and 6 in the space provided. You must show your work to receive credit.

(7 pts) 4. If $P\left(-\frac{12}{13}, -\frac{5}{13}\right)$ is on the terminal side of θ, then $\sec\theta =$

A. $-\frac{13}{5}$

B. $\frac{13}{5}$

C. $-\frac{12}{13}$

D. $\frac{12}{13}$

E. $\frac{12}{5}$

F. $-\frac{12}{5}$

G. None of these

(10 pts) 5. Approximate to the nearest 0.01^0 all angles θ in $[0^0, 360^0)$ that satisfy $\cot\theta = -0.4125$.

$\theta =$ _____

(12 pts) 6. A portion of the graph of $y = a \sin(bx + c)$ is shown. Find the values of a, b, and c if $a > 0$ and $b > 0$.

a = _____

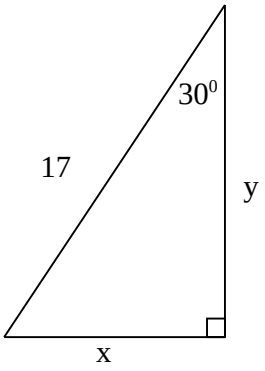
b = _____

c = _____

Name_____

Place your answers in the space provided. You must show your work to receive credit.

(12 pts) 7. Find the exact values of x and y using trigonometric functions.



x = _____

y = _____

(12 pts) 8. In a circle of radius 17 yards, find the length of the arc subtended by a central angle of 305^0. Round your answer to the nearest hundredth of a yard. (State the equation being used and solve.)

Arc length = _____

Name_____

Place your answers in the space provided. You must show your work to receive credit.

(12 pts) 9. A drawbridge is 150 feet long when stretched across a river and opens at the exact center. The two sections of the bridge can be rotated upward through an angle of 35^0. If the water level is 15 feet below the closed bridge, find the distance d between the end of a section and the water level when the bridge is fully open. (Make a sketch, set up an equation(s) and solve.) Round your answer to the nearest foot.

d = [ ]

(14 pts) 10. Two ropes from the top of a 35-ft tent pole are anchored to the ground below by two stakes so that the two stakes and the tent pole lie along the same line. If the angles of depression from the top of the pole to each of the stakes are 47^0 and 43^0, how far apart are the stakes? Assume the tent pole is perpendicular to the ground and between the stakes. (Make and label a sketch, set up an equation(s) and solve.) Round your answer to the nearest tenth of a foot.

Distance = [ ]