Name_____

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

(8 pts) 1. Determine the quadrant containing θ if $\tan\theta < 0$ and $\csc\theta > 0$.

A. II
B. II and IV
C. III
D. II and III
E. IV

(8 pts) 2. The point $P\left(-\frac{24}{25}, \frac{7}{25}\right)$ is on the terminal side of θ. Find $\cos\theta$.

A. $\frac{7}{24}$
B. $\frac{24}{25}$
C. $-\frac{24}{7}$
D. $-\frac{7}{25}$
E. None of these

(8 pts) 3. $\tan^2\theta\left(1+\cot^2\theta\right) =$

A. $-\frac{1}{\cos^2\theta}$
B. $\frac{1}{1-\sin^2\theta}$
C. $1+\cos^2\theta$
D. $1-\sin^2\theta$
E. $\frac{1}{1+\sin^2\theta}$

Name_____

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

(10 pts) 4. Find the amplitude, the period, and the phase shift for

$$y = -3\cos\left(2x - \frac{\pi}{4}\right)$$

Amplitude:	
Period:	
Phase Shift:	

(10 pts) 5. If an arc of a circle is 30 meters and the central angle is 65^0, determine the diameter of the circle. Round your answers to hundredths.

Diameter = ____

(10 pts) 6. Approximate to the nearest hundredth all angles, θ, in the interval $[0, 2\pi)$ that satisfy $\cos\theta = -0.6194$. State the quadrant(s) in which the solution(s) will lie.

Quadrants:	
$\theta \approx$	

Name_____

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

(12 pts) 7. For the following, find the reference angle, θ_R, for the given angle. Then find the exact value of the given function. Do not use a calculator.

a) $\sin\left(-\frac{3\pi}{4}\right)$

$\theta_R =$ | |

$\sin\left(-\frac{3\pi}{4}\right) =$ | |

b) $\cot\left(\frac{11\pi}{6}\right)$

$\theta_R =$ | |

$\cot\left(\frac{11\pi}{6}\right) =$ | |

(12 pts) 8. Find each of the following. Give an exact value for the answers. (Do not use a calculator.)

(6 pts) a) If $\cot\theta = -\frac{5}{13}$ and $\cos\theta < 0$, find $\sin\theta$.

$\sin\theta =$ | |

(6 pts) b) If $\sec\theta = 5$ and $\csc\theta < 0$, find $\tan\theta$.

$\tan\theta =$ | |

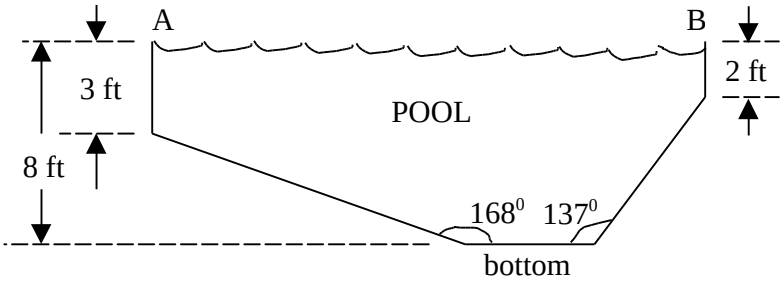
Name_____

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

(10 pts) 9. During a severe windstorm, a telephone pole broke several feet above the ground. The top part of the pole bent at the break, with the top touching the ground 48.3 feet from the base of the pole. If the top part of the pole makes an angle of 26.6^0 with the ground, how tall was the original pole? (Draw and label a sketch, set up an equation(s), and solve.) Round your answer to the nearest tenth.

Original pole height = ☐

(12 pts) 10. The cross section of a swimming pool has the shape shown. If the distance from A to B along the surface of the water is 40 feet, what is the distance from A to B along the walls and bottom of the pool (along the solid black line)? (Name a variable(s), set up an equation(s) and solve.) Round your answer to the nearest foot.



Total Length ≈ ☐