

Math 147 Analytic Trigonometry

Name _____

Problem Set #5

Solve the following triangles.

4 points each

1. $a = 43.7$ $c =$ _____
 $b = 35.1$ $\sphericalangle B =$ _____
 $\sphericalangle A = 23.9^\circ$ $\sphericalangle C =$ _____
 $Area =$ _____

2. $a = 12.3$ $c =$ _____
 $b = 84.5$ $\sphericalangle B =$ _____
 $\sphericalangle A = 71.0^\circ$ $\sphericalangle C =$ _____
 $Area =$ _____

3. $b = 78.0$ $a =$ _____
 $c = 150.0$ $\sphericalangle B =$ _____
 $\sphericalangle A = 83.0^\circ$ $\sphericalangle C =$ _____
 $Area =$ _____

4. $a = 934$ $c =$ _____
 $b = 1420$ $\sphericalangle A =$ _____
 $\sphericalangle B = 108^\circ$ $\sphericalangle C =$ _____
 $Area =$ _____

5. Find all the solutions in the interval $[0, 2\pi)$ for $3 - 4\cos^2 \theta = 0$ 3 points

6. Find all the solutions in the interval $[0, 2\pi)$ for $2\sin\theta + \csc\theta = 0$ 3 points

7. Find the trigonometric functions for $\theta = 480^\circ$ 6 points

$\sin \theta =$ _____ $\csc \theta =$ _____

$\cos \theta =$ _____ $\sec \theta =$ _____

$\tan \theta =$ _____ $\cot \theta =$ _____

8. Find the trigonometric functions for $\theta = \frac{3\pi}{4}$ radians 6 points

$\sin \theta =$ _____ $\csc \theta =$ _____

$\cos \theta =$ _____ $\sec \theta =$ _____

$\tan \theta =$ _____ $\cot \theta =$ _____

9. If $\cos \theta = 0.9848$, find two different values for θ where $0 \leq \theta < 360^\circ$ 4 points

$\theta_1 =$ _____ $^\circ$ $\theta_2 =$ _____ $^\circ$

10. If $\tan \theta = 0.4663$, find two different values for θ where $0 \leq \theta < 2\pi$ radians **4 points**

$\theta_1 = \underline{\hspace{2cm}}$ radians $\theta_2 = \underline{\hspace{2cm}}$ radians

11. Find the reference angle for $\theta = 480^\circ$ **2 points**

$\bar{\theta} = \underline{\hspace{2cm}}$ °

12. Find the reference angle for $\theta = \frac{3\pi}{4}$ radians **2 points**

$\bar{\theta} = \underline{\hspace{2cm}}$ radians

Solve the following word problems.

5 points each

13. Fire Station B is located 11 kilometers due east of Fire Station A. Smoke is spotted at a bearing of South 23.67° East from Station A and South 68.67° West from Station B. How far is the fire from each fire station?

14. From a point on level ground the angle of elevation of the top of the building is 37.3° . From a point 50 yards closer, the angle of elevation is 56.2° . Find the height of the building.

15. An airplane, flying at an altitude of 6 miles, is on a flight path that passes directly over an observer. If θ is the angle of elevation from the observer to the plane, find the distance from the observer to the plane when:

(a) $\theta = 30^\circ$

(b) $\theta = 90^\circ$

(c) $\theta = 120^\circ$

20. A family is traveling due west on a road that passes a famous landmark. At a given time the bearing to the landmark is North 62° West, and after the family travels 5 miles farther the bearing is North 38° West. What is the closest the family will come to the landmark while on the road?