Name ________________________________

1. a. Convert $\theta = 315°$ to an angle in radians.

   b. Convert $\theta = \frac{7\pi}{10}$ to an angle in degrees.

2. Church Circle in Annapolis has a radius of about 80 feet. The angle between West Street and Main Street is about 110°. What is the length of the curb between West Street and Main Street?

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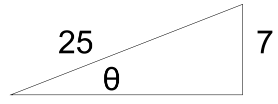
3. For the triangle below, find the six trigonometric functions of θ.



4. If $\cos\theta = \frac{4}{9}$, find exact $\sin\theta$, $\tan\theta$, $\cot\theta$, $\sec\theta$, $\csc\theta$,

5. Find the six trigonometric functions of $\frac{\pi}{3}$ in terms of ratios and roots.

6. Use the calculator to evaluate trigonometric functions of these acute angles.

   a. Find sec 1.3

   b. Find cot 0.6

7. Use one of the three trigonometric forms of the Pythagorean Theorem to find $\cot \theta$ in terms of $\csc \theta$.

8. Solve for angle B and sides a and c in an "abcABC" right triangle where angle $A = 2\pi/5$ and side $b = 10$.

9 Solve this word problems in Stewart involving Parallax . Page 487#64

10. Find the secant and cotangent of the angle in standard position whose terminal side contains the point (-3,-4).

11. Find the values of these trig functions in terms of roots and ratios.

    a. $\cos \frac{7\pi}{6}$ b. $\cot\left(-\frac{3\pi}{4}\right)$

12. For a slice of pie to be considered by the restaurant to be a deluxe dessert, the volume must be at least 16 cubic inches. Suppose the pies at the restaurant are 12 inches in diameter and one inch deep. Find the central angle of the slice of pie (circular sector) that meets the minimum requirement of a deluxe dessert.

13. Use the law of sines to solve this “abcABC” triangle for the remaining parts, angle B, angle C and side b given angle A = 40 °, side a = 10 and side c = 12. [Note: There are two triangles that have the the above dimensions, one with an acute angle C and one with an obtuse angle C. Draw, label and solve both triangles.]

Triangle with C acute

Triangle with C obtuse

14. Solve this word problems using the law of sines. The leaning tower of Pisa was originally perpendicular to the ground, and 179 feet tall. Because of a weak foundation, it now leans at a certain angle θ from the perpendicular. When the top of the tower is viewed from a point 150 feet from the center of its base the angle of elevation is 53.3°.

    a. Approximate the angle θ.

    b. Approximate the distance the center of the top of the tower has moved from the perpendicular.

15. Apply Heron's formula to find the value of a triangular field having sides 30, 40 and 50 feet if the property value is $10 per square foot.

16.. Use the law of cosines to solve to solve this “abcABC” triangle for the remaining parts, side a, angle B and angle C given angle A = 20 °, side b = 8 and side c = 10. Draw and label the triangle.

17. Solve this word problems in Stewart using the law of cosines and Flying Kites. Page 515#47.

18. Graph one period of y = csc x. Label both axes with numbers.

19. Consider the function $y = f(x) = 3\sin(2x - \pi) - 4$.

    a Put the equation into standard form ($\pm\frac{x-h}{a}, \pm\frac{y-k}{b}$).

    b. Give the reflection, stretching and translation necessary to obtain the given curve from the simple curve y = sin x.

    b. Give the numerical values of each of the following and label the graph with the quantity : amplitude, period, phase shift.

    c. Graph the function. Label both axes with numbers.