Name: _____

Precalculus: Unit 5 Pretest
Trigonometric Functions

1. Convert $\frac{7\pi}{18}$ radians to degrees. (N-Q-1)   (4 points)

2. MULTIPLE CHOICE: If $\cos 40° = a$, what is $\sin 50°$ in terms of a? (G-SRT-7)   (3 points)

   a. a b. $\frac{1}{a}$ c. $90 - a$ d. $a\sqrt{2}$

3. Find the measure of the radius of a circle with a central angle of $110°$ that intercepts an arc of 20 centimeters. (F-TF-1)   (5 points)

4. Use your unit circle to find the exact value (no decimals) of each of the following:
   (F-TF-2, F-TF-3)   (3 points each)

   a. $\cos \frac{11\pi}{6} =$ b. $\tan \frac{19\pi}{3} =$

   c. $\sec \frac{9\pi}{2} =$ d. $\sin \frac{-15\pi}{4} =$

5. If the point $(10, -24)$ is on the terminal side of θ, determine the exact value (no decimals) of the six trigonometric functions of θ. (Draw an appropriate reference triangle.) (F-TF-3) (7 points)
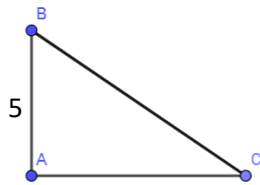
$$\sin\theta = \qquad\qquad \csc\theta =$$

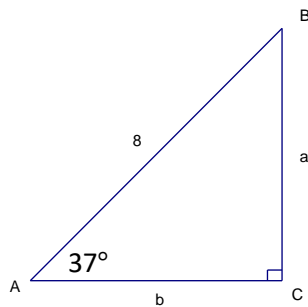$$\cos\theta = \qquad\qquad \sec\theta =$$

$$\tan\theta = \qquad\qquad \cot\theta =$$

6. Given that $AB = 5$ and $\tan B = \frac{4}{3}$ in the right triangle below, what is the value of $\sin B + \cos B$? (G-SRT-6) (5 points)

7. Solve the following right triangles. Round all answers to the hundredths place. (Make sure your calculator is in degree mode.) (G-SRT-8) (8 points each)
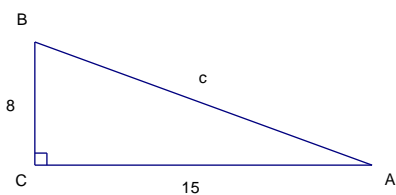
a.

$$a =$$

$$b =$$

$$m\angle B =$$

b.

$$c =$$

$$m\angle A =$$

$$m\angle B =$$

8. A surveyor places her telescope on the top of a tripod 5 feet above the ground. She measures and 8° angle of elevation above the horizontal to the top of the tree that is 120 feet away. How tall is the tree? Draw a diagram to represent the situation and calculate the height of the tree. (G-SRT-8) (6 points)

9. Batman was standing atop Wayne enterprises when he saw the Bat signal 75 feet above him at a 30° angle of elevation. Detective Gordon is already at the crime scene. The angle of depression from Batman to the crime scene is 40°. If the Bat signal is directly above the crime scene, how far away from the crime scene is Batman? Draw a diagram to illustrate the situation and find the indicated distance. (G-SRT-8) (7 points)

10. In a truck with 36 inch wheels (18 inch radius), if the wheels are rotating at 630 rpm, find the truck's speed in miles per hour. (5 points)