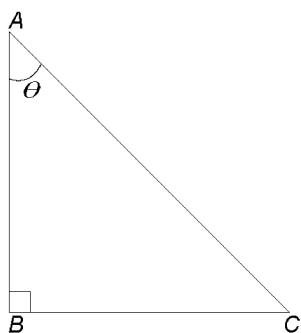


Unit 4: Unit Circle & Right Triangle Trigonometry**Short Answer**

1. If $\cot\theta = \frac{5}{12}$, find $\sec\theta$.
2. Write $62^\circ 21' 47''$ as a decimal to the nearest thousandth.
3. Find the least positive angle measurement that is coterminal with -270° .
4. Find the values of the six trigonometric functions for angle θ , when $AC = 25$ and $BC = 20$.



5. Change 250.52° to degrees, minutes, and seconds.
6. Find the values of the six trigonometric functions of an angle in standard position if the point with coordinates $(5, 12)$ lies on its terminal side.
7. Find the exact value of $\sin(-315^\circ)$.

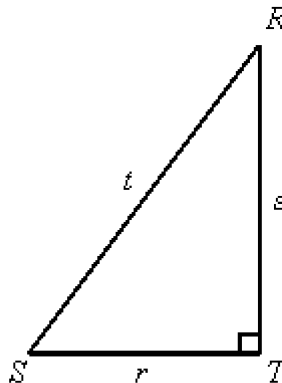
Find the value of the given trigonometric function.

8. $\cos(1500^\circ)$
9. $\cot(750^\circ)$
10. A 15-m long ladder rests against a wall at an angle of 60° with the ground. How far is the foot of the ladder from the wall?
11. In a tourist bus near the base of Eiffel Tower at Paris, a passenger estimates the angle of elevation to the top of the tower to be 60° . If the height of Eiffel Tower is about 984 feet, what is the distance from the bus to the base of the tower?

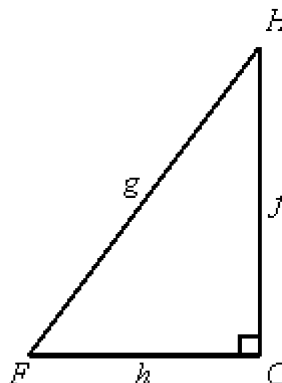
Name: _____

ID: A

12. If $t = 30.1$ and $r = 19$, find S . Round to the nearest tenth.



13. If $g = 35.4$ and $F = 34^\circ$, find h . Round to the nearest tenth.



14. Two boys are on opposite sides of a tower. They sight the top of the tower at 33° and 24° angles of elevation respectively. If the height of the tower is 100 m, find the distance between the two boys.
15. A man standing 20 m from a tower estimates the angles of elevation of the top and bottom of a flagpole on the tower as 58° and 55° . Calculate the height of the flagpole.

Unit 4: Unit Circle & Right Triangle Trigonometry

Answer Section

SHORT ANSWER

1. ANS:

$$\sec \theta = \frac{13}{5}$$

PTS: 1 DIF: Average REF: Lesson 4-1
 OBJ: 4-1.1 Find values of trigonometric functions for acute angles of right triangles.
 NAT: 3 TOP: Right Triangle Trigonometry
 KEY: Trigonometry | Trigonometric Ratios
 NOT: Example 2: Use One Trigonometric Value to Find Others

2. ANS:

$$62.363^\circ$$

PTS: 1 DIF: Average REF: Lesson 4-2
 OBJ: 4-2.1 Convert degree measures of angles to radian measures, and vice versa.
 NAT: 3 TOP: Degrees and Radians KEY: Angle Measures | Degree Measures
 NOT: Example 1: Convert Between DMS and Decimal Degree Form

3. ANS:

$$90^\circ$$

PTS: 1 DIF: Average REF: Lesson 4-2
 OBJ: 4-2.2 Use angle measure to solve real-world problems. NAT: 3
 TOP: Degrees and Radians KEY: Coterminal Angles
 NOT: Example 3: Find and Draw Coterminal Angles

4. ANS:

$$\sin \theta = \frac{4}{5}, \cos \theta = \frac{3}{5}, \csc \theta = \frac{5}{4}, \sec \theta = \frac{5}{3}, \tan \theta = \frac{4}{3}, \text{ and } \cot \theta = \frac{3}{4}.$$

If θ is the measure of an acute angle of a right triangle, *opp* is the measure of the leg opposite θ , *adj* is the measure of the leg adjacent to θ , and *hyp* is the measure of the hypotenuse, then the following are true.

$$\sin \theta = \frac{opp}{hyp} \quad \cos \theta = \frac{adj}{hyp} \quad \tan \theta = \frac{opp}{adj}$$

$$\csc \theta = \frac{hyp}{opp} \quad \sec \theta = \frac{hyp}{adj} \quad \cot \theta = \frac{adj}{opp}$$

PTS: 1 DIF: Average REF: Lesson 13-1
 OBJ: 13-1.1 Find values of trigonometric functions for acute angles.
 NAT: NA 2 | NA 8 | NA 9 | NA 10 | NA 3
 TOP: Find values of trigonometric functions for acute angles.
 KEY: Trigonometric Functions | Acute Angles MSC: 1998 Lesson 13-1

5. ANS:
250° 31' 12''

PTS: 1 DIF: Average REF: Lesson 4-2

OBJ: 4-2.1 Convert degree measures of angles to radian measures, and vice versa.

NAT: 3 TOP: Degrees and Radians

KEY: Angle Measures | Degree Measures

NOT: Example 1: Convert Between DMS and Decimal Degree Form

6. ANS:

$$\sin \alpha = \frac{12}{13}, \cos \alpha = \frac{5}{13}, \tan \alpha = \frac{12}{5}$$

$$\csc \alpha = \frac{13}{12}, \sec \alpha = \frac{13}{5}, \cot \alpha = \frac{5}{12}$$

PTS: 1 DIF: Average REF: Lesson 4-3

OBJ: 4-3.1 Find values of trigonometric functions for any angle.

NAT: 3 TOP: Trigonometric Functions on the Unit Circle

KEY: Trigonometry | Trigonometric Functions | Unit Circle

NOT: Example 7: Find Trigonometric Values Using the Unit Circle

7. ANS:

$$\frac{1}{\sqrt{2}}$$

PTS: 1 DIF: Average REF: Lesson 4-3

OBJ: 4-3.2 Find values of trigonometric functions using the unit circle.

NAT: 3 TOP: Trigonometric Functions on the Unit Circle

KEY: Circular Functions | Unit Circle | Periodic Functions

NOT: Example 8: Use the Periodic Nature of Circular Functions

8. ANS:

$$\frac{1}{2}$$

First, find the reference angle θ' . Then, find the value of the trigonometric function for θ' . Then, using the quadrant in which the terminal side of θ lies, determine the sign of the trigonometric function value of θ .

PTS: 1 DIF: Average REF: Lesson 13-3

OBJ: 13-3.1 Find values of sine and cosine for general angles. NAT: NA 1 | NA 4 | NA 9 | NA 10 | NA 3

TOP: Find values of sine and cosine for general angles.

KEY: Sine | Cosine

MSC: 1998 Lesson 13-3

9. ANS:

$$\sqrt{3}$$

First, find the reference angle θ' . Then, find the value of the trigonometric function for θ' . Then, using the quadrant in which the terminal side of θ lies, determine the sign of the trigonometric function value of θ .

PTS: 1 DIF: Average REF: Lesson 13-3

OBJ: 13-3.3 Find values of tangent and cotangent for general angles.

NAT: NA 1 | NA 4 | NA 9 | NA 10 | NA 3

TOP: Find values of tangent and cotangent for general angles.

KEY: Tangent | Cotangent

MSC: 1998 Lesson 13-3

10. ANS:
7.5 m
Write an equation using a trigonometric function that involves the ratio of length and 15.
- PTS: 1 DIF: Basic REF: Lesson 13-1
OBJ: 13-1.3 Solve real-world problems involving right triangles.
NAT: NA 2 | NA 6 | NA 9 | NA 10 | NA 3
TOP: Solve real-world problems involving right triangles.
KEY: Right Triangles | Real-World Problems MSC: 1998 Lesson 13-1
11. ANS:
568.11 feet
Write an equation using a trigonometric function that involves the ratio of the height of Eiffel Tower and the distance of the bus from the tower.
- PTS: 1 DIF: Average REF: Lesson 13-1
OBJ: 13-1.3 Solve real-world problems involving right triangles.
NAT: NA 2 | NA 6 | NA 9 | NA 10 | NA 3
TOP: Solve real-world problems involving right triangles.
KEY: Right Triangles | Real-World Problems MSC: 1998 Lesson 13-1
12. ANS:
 $S = 50.9^\circ$
- PTS: 1 DIF: Average REF: Lesson 4-1 OBJ: 4-1.2 Solve right triangles.
NAT: 3 TOP: Right Triangle Trigonometry KEY: Find Angle Measurements
NOT: Example 5: Find a Missing Angle Measure
13. ANS:
 $h = 29.3$
- PTS: 1 DIF: Average REF: Lesson 4-1 OBJ: 4-1.2 Solve right triangles.
NAT: 3 TOP: Right Triangle Trigonometry
KEY: Trigonometry | Trigonometric Ratios | Right Triangles
NOT: Example 3: Find a Missing Side Length
14. ANS:
378.59 m
Write an equation using a trigonometric function.
- PTS: 1 DIF: Advanced REF: Lesson 13-1
OBJ: 13-1.3 Solve real-world problems involving right triangles.
NAT: NA 2 | NA 6 | NA 9 | NA 10 | NA 3
TOP: Solve real-world problems involving right triangles.
KEY: Right Triangles | Real-World Problems MSC: 1998 Lesson 13-1

15. ANS:

3.44 m

Write an equation using a trigonometric function that involves the ratio of the distance from the tower and the height of the tower.

PTS: 1 DIF: Advanced REF: Lesson 13-1

OBJ: 13-1.3 Solve real-world problems involving right triangles.

NAT: NA 2 | NA 6 | NA 9 | NA 10 | NA 3

TOP: Solve real-world problems involving right triangles.

KEY: Right Triangles | Real-World Problems

MSC: 1998 Lesson 13-1