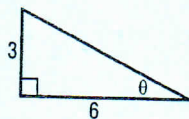


Chapter Test

1. Find the exact value of the six trigonometric functions of the angle θ in the figure.

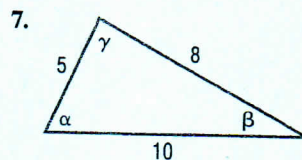
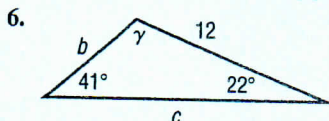
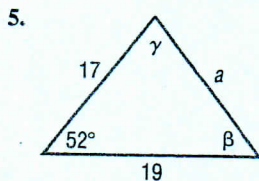


2. Find the exact value of $\sin 40^\circ - \cos 50^\circ$.

3. A 12 foot ladder leans against a building. The top of the ladder leans against the wall 10.5 feet from the ground. What is the angle formed by the ground and the ladder?

4. A hot air balloon is flying at a height of 600 feet and is directly above the Marshall Space Flight Center in Huntsville, AL. The pilot of the balloon looks down at the airport that is known to be 5 miles from the Marshall Space Flight Center. What is the angle of depression from the balloon to the airport?

In Problems 5–7, use the given information to determine the three remaining parts of each triangle.



In Problems 8–10, solve each triangle.

8. $\alpha = 55^\circ$, $\gamma = 20^\circ$, $a = 4$

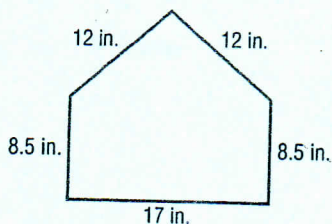
9. $a = 3$, $b = 7$, $\alpha = 40^\circ$

10. $a = 8$, $b = 4$, $\gamma = 70^\circ$

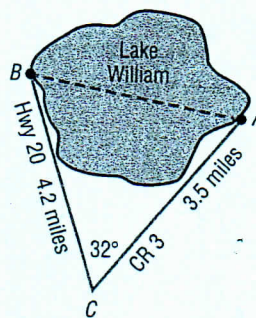
11. Find the area of the triangle described in Problem 10.

12. Find the area of the triangle described in Problem 7.

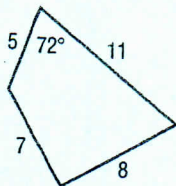
13. The dimensions of home plate at any major league baseball stadium are shown. Find the area of home plate.



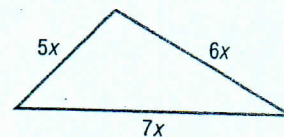
15. Madison wants to swim across Lake William from the fishing lodge (A) to the boat ramp (B) but she wants to know the distance first. Highway 20 goes right past the boat ramp and County Road 3 goes to the lodge. The two roads intersect at point (C), 4.2 miles from the ramp and 3.5 miles from the lodge. Madison uses a transit to measure the angle of intersection of the two roads to be 32° . How far will she need to swim?



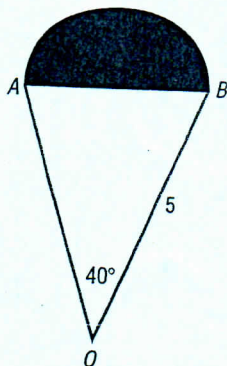
14. Find the area of the quadrilateral shown below.



17. The area of the triangle shown below is $54\sqrt{6}$ square units; find the lengths of the sides.



16. Given that $\triangle OAB$ is an isosceles triangle and the shaded sector is a semicircle, find the area of the entire region. Express your answer as a decimal rounded to two places.



Chapter Test (page 568)

1. $\sin \theta = \frac{\sqrt{5}}{5}$; $\cos \theta = \frac{2\sqrt{5}}{5}$; $\tan \theta = \frac{1}{2}$; $\csc \theta = \sqrt{5}$; $\sec \theta = \frac{\sqrt{5}}{2}$; $\cot \theta = 2$ 2. 0 3. 61.0° 4. 1.3° 5. $a = 15.88$; $\beta = 57.56^\circ$; $\gamma = 70.44^\circ$
6. $b = 6.85$; $\gamma = 117^\circ$; $c = 16.30$ 7. $\alpha = 52.41^\circ$; $\beta = 29.67^\circ$; $\gamma = 97.92^\circ$ 8. $b = 4.72$; $c = 1.67$; $\beta = 105^\circ$ 9. No triangle 10. $c = 7.62$; $\alpha = 80.5^\circ$; $\beta = 2$
11. 15.04 square units 12. 19.81 square units 13. The area of home plate is about 216.5 square inches. 14. 54.15 square units
15. Madison will have to swim about 2.23 miles. 16. 12.63 square units 17. The lengths of the sides are 15, 18, and 21.