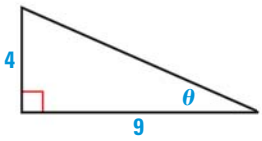
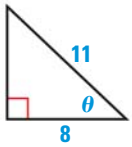
13 CHAPTER TEST

Evaluate the six trigonometric functions of the angle θ.

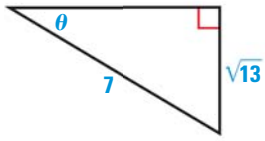
1.



2.



3.



Convert the degree measure to radians or the radian measure to degrees.

4. $260°$ **5.** $-50°$ **6.** $\frac{4\pi}{5}$ **7.** $\frac{8\pi}{3}$

Evaluate the function without using a calculator.

8. $\tan 150°$ **9.** $\sec(-480°)$ **10.** $\sin\left(-\frac{5\pi}{3}\right)$ **11.** $\cos\frac{11\pi}{6}$

Evaluate the expression in both radians and degrees without using a calculator.

12. $\cos^{-1} 1$ **13.** $\tan^{-1}\sqrt{3}$ **14.** $\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$ **15.** $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

Solve $\triangle ABC$. (*Hint:* Some of the "triangles" may have no solution and some may have two solutions.)

16. $A = 47°, C = 32°, c = 12$

17. $a = 24, b = 12, c = 17$

18. $B = 63°, a = 11, b = 8$

19. $C = 101°, a = 23, b = 19$

20. $a = 24, b = 30, c = 21$

21. $A = 26°, B = 77°, c = 50$

Find the area of $\triangle ABC$.

22. $A = 81°, b = 16, c = 18$

23. $a = 8, b = 6, c = 7$

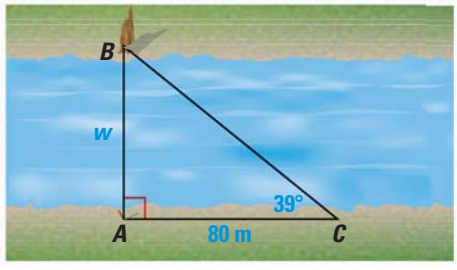
24. $a = 25, b = 24, c = 38$

25. $C = 111°, a = 7, b = 13$

26. $a = 16, b = 33, c = 24$

27. $B = 61°, a = 12, c = 18$

28. SURVEYING To measure the width of a river, you plant a stake at point A on one side of the riverbank, directly across from a tree stump at point B on the other side of the riverbank. From point A, you walk 80 meters along the riverbank to point C. You find the measure of angle C to be $39°$. What is the width w of the river?



29. CONSTRUCTION A crane has a 200 foot arm with a lower end that is 5 feet off the ground. The arm has to reach to the top of a building that is 160 feet high. At what angle θ should the arm be set?

30. NAVIGATION A boat travels 40 miles due west before turning $20°$ and traveling an additional 25 miles. How far is the boat from its point of departure?