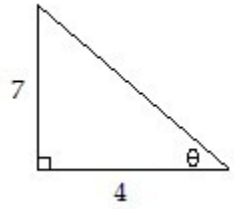
Test Review
Chapter 8

ALL PROBLEMS MUST BE DONE ON SEPARATE PAPER OTHERWISE; THE REVIEW WILL NOT BE GRADED. SHOW ALL WORK FOR CREDIT. REVIEW IS DUE ON TEST DAY.

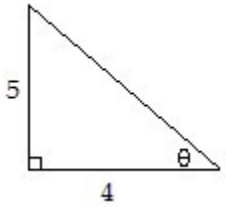
Find the value of the indicated trigonometric function of the angle θ in the figure. Give an exact answer with a rational denominator.

1)



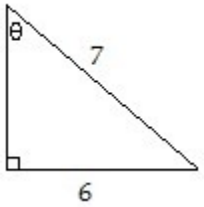
Find sin θ.

2)



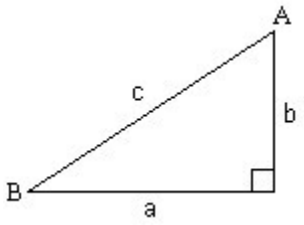
Find cos θ.

3)



Find tan θ.

Solve the right triangle using the information given. Round answers to two decimal places, if necessary.



4) b = 3, B = 30°; Find a, c, and A.

5) a = 4, b = 3; Find c, A, and B.

6) a = 4, A = 40°; Find b, c, and B.

Solve the problem.

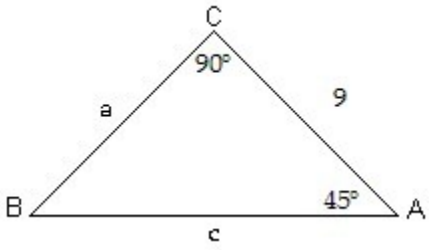
7) A building 210 feet tall casts a 50 foot long shadow. If a person looks down from the top of the building, what is the measure of the angle between the end of the shadow and the vertical side of the building (to the nearest degree)? (Assume the person's eyes are level with the top of the building.)

8) A surveyor is measuring the distance across a small lake. He has set up his transit on one side of the lake 140 feet from a piling that is directly across from a pier on the other side of the lake. From his transit, the angle between the piling and the pier is 55°. What is the distance between the piling and the pier to the nearest foot?

9) A straight trail with a uniform inclination of 12° leads from a lodge at an elevation of 700 feet to a mountain lake at an elevation of 7300 feet. What is the length of the trail (to the nearest foot)?

Solve the triangle.

10)



11) A = 70°, B = 100°, a = 5

Two sides and an angle are given. Determine whether the given information results in one triangle, two triangles, or no triangle at all. Solve any triangle(s) that results.

12) A = 30°, a = 21, b = 42

13) B = 26°, b = 6.5, a = 7.41

Solve the problem.

14) An airplane is sighted at the same time by two ground observers who are 3 miles apart and both directly west of the airplane. They report the angles of elevation as 14° and 24° How high is the airplane?

Two sides and an angle are given. Determine whether the given information results in one triangle, two triangles, or no triangle at all. Solve any triangle(s) that results.

15) B = 106°, b = 2, a = 25

Solve the problem.

16) A rocket tracking station has two telescopes A and B placed 1.8 miles apart. The telescopes lock onto a rocket and transmit their angles of elevation to a computer after a rocket launch. What is the distance to the rocket from telescope B at the moment when both tracking stations are directly east of the rocket telescope A reports an angle of elevation of 21° and telescope B reports an angle of elevation of 47°?

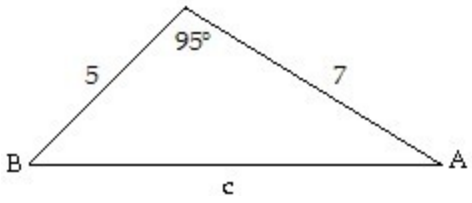
17) A surveyor standing 60 meters from the base of a building measures the angle to the top of the building and finds it to be 37°. The surveyor then measures the angle to the top of the radio tower on the building and finds that it is 50°. How tall is the radio tower?

18) A guy wire to the top of a tower makes an angle of 63° with the level ground. At a point 34 feet farther from the base of the tower and in line with the base of the wire, the angle of elevation to the top of the tower is 22°. What is the length of the guy wire?

19) A ship sailing parallel to shore sights a lighthouse at an angle of 10° from its direction of travel. After traveling 5 miles farther, the angle is 25°. At that time, how far is the ship from the lighthouse?

Solve the triangle.

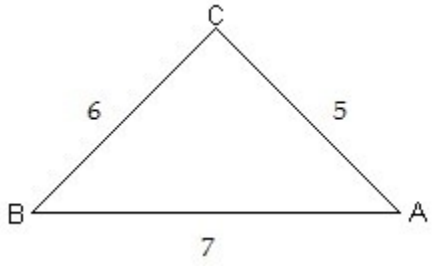
20)



21) a = 50, b = 10, C = 115°

22) b = 5, c = 6, A = 70°

23)



24) a = 6, b = 14, c = 16

25) a = 19, b = 16, c = 11

Solve the problem.

26) Two points A and B are on opposite sides of a building. A surveyor selects a third point C to place a transit. Point C is 52 feet from point A and 72 feet from point B. The angle ACB is 57°. How far apart are points A and B?

27) Two sailboats leave a harbor in the Bahamas at the same time. The first sails at 23 mph in a direction 350°. The second sails at 33 mph in a direction 200°. Assuming that both boats maintain speed and heading, after 5 hours, how far apart are the boats?

Find the area of the triangle. If necessary, round the answer to two decimal places.

28) a = 12, b = 15, C = 52°

29) a = 14, b = 32, c = 26

An object attached to a coiled spring is pulled down a distance a from its rest position and then released. Assuming that the motion is simple harmonic with period T, write an equation that relates the displacement d of the object from its rest position after t seconds. Also assume that the positive direction of the motion is up.

30) a = 6; T = 3 seconds

At time t = 0, an object attached to a coiled spring is at its resting position and moving down. Assuming that the motion is simple harmonic with period T, write an equation that relates the displacement d of the object from its rest position after t seconds. Also assume that the positive direction of the motion is up.

31) a = 10; T = 4 seconds

The displacement d (in meters) of an object at time t (in seconds) is given. Describe the motion of the object. What is the maximum displacement from its resting position, the time required for one oscillation, and the frequency?

32) d = 4 sin (5t)

33) d = 4 cos (3t)