

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Provide an appropriate response.**

1) Find the supplement of an angle whose measure is  $103^\circ$ .

1) \_\_\_\_\_

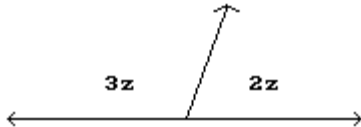
2) Find the complement of an angle whose measure is  $39^\circ 16' 50''$ .

2) \_\_\_\_\_

**Find the measure of each angle in the problem.**

3)

3) \_\_\_\_\_



**Perform the calculation.**

4)  $92^\circ 24' - 34^\circ 44'$

4) \_\_\_\_\_

**Convert the angle to decimal degrees and round to the nearest hundredth of a degree.**

5)  $56^\circ 35' 43''$

5) \_\_\_\_\_

**Convert the angle to degrees, minutes, and seconds.**

6)  $140.54^\circ$

6) \_\_\_\_\_

**Find the angle of least positive measure coterminal with the given angle.**

7)  $-116^\circ$

7) \_\_\_\_\_

**Draw the given angle in standard position. Draw an arrow representing the correct amount of rotation. Find the measure of two other angles, one positive and one negative, coterminal with the given angle.**

8)  $115^\circ$

8) \_\_\_\_\_

**Solve the problem.**

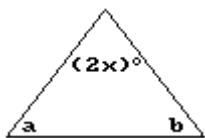
9) A wheel makes 372 revolutions per minute. How many revolutions does it make per second?

9) \_\_\_\_\_

**Use the properties of angle measures to find the measure of each marked angle.**

10)

10) \_\_\_\_\_



$$a = (x + 19)^\circ$$

$$b = (x + 81)^\circ$$

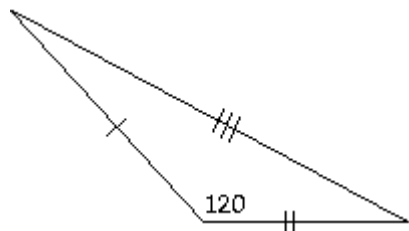
**Find the measure of the third angle of a triangle if the measures of the other two angles are given.**

11)  $48^\circ 19'$  and  $86^\circ 22'$

11) \_\_\_\_\_

Classify the triangle as acute, right, or obtuse and classify it as equilateral, isosceles, or scalene.

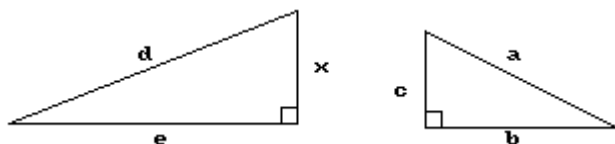
12)



12) \_\_\_\_\_

The triangles are similar. Find the missing side, angle or value of the variable.

13)



13) \_\_\_\_\_

- $a = 25$
- $b = 24$
- $c = 7$
- $d = 75$
- $e = 72$

Solve the problem. Round answers to the nearest tenth if necessary.

- 14) A triangle drawn on a map has sides of lengths 9 cm, 12 cm, and 15 cm. The shortest of the corresponding real-life distances is 122 km. Find the longest of the real-life distances. 14) \_\_\_\_\_

Suppose that  $\theta$  is in standard position and the given point is on the terminal side of  $\theta$ . Give the exact value of the indicated trig function for  $\theta$ .

- 15) (21, 28); Find  $\sin \theta$ . 15) \_\_\_\_\_

- 16) (6, 5); Find  $\tan \theta$ . 16) \_\_\_\_\_

An equation of the terminal side of an angle  $\theta$  in standard position is given along with a restriction on  $x$ . Find the indicated trigonometric function value of  $\theta$ . Do not use a calculator.

- 17)  $8x + 5y = 0, x \leq 0$ ; Find  $\csc \theta$ . 17) \_\_\_\_\_

Evaluate the expression.

- 18)  $\sec(-90^\circ)$  18) \_\_\_\_\_

If  $n$  is an integer,  $n \cdot 180^\circ$  represents an integer multiple of  $180^\circ$ , and  $(2n + 1) \cdot 90^\circ$  represents an odd integer multiple of  $90^\circ$ . Decide whether the expression is equal to 0, 1,  $-1$ , or is undefined.

- 19)  $\cos((2n + 1) \cdot 90^\circ)$  19) \_\_\_\_\_

If  $r$  is a positive number and the point  $(x, y)$  is in the indicated quadrant, decide whether the given ratio is positive or negative.

- 20) III,  $\frac{x}{r}$  20) \_\_\_\_\_

Evaluate the expression.

21)  $\sin^2 90^\circ + \cos^2 90^\circ$  21) \_\_\_\_\_

22)  $\cos 0^\circ - 8 \sin 90^\circ$  22) \_\_\_\_\_

Use the appropriate identity to find the indicated function value. Rationalize the denominator, if applicable. If the given value is a decimal, round your answer to three decimal places.

23)  $\cos \theta$ , given that  $\sec \theta = -4$  23) \_\_\_\_\_

24)  $\tan \theta$ , given that  $\cot \theta = \frac{\sqrt{5}}{6}$  24) \_\_\_\_\_

Determine the signs of the given trigonometric functions of an angle in standard position with the given measure.

25)  $\cos (-290^\circ)$  and  $\sin (-290^\circ)$  25) \_\_\_\_\_

Identify the quadrant for the angle  $\theta$  satisfying the following conditions.

26)  $\tan \theta > 0$  and  $\sin \theta < 0$  26) \_\_\_\_\_

27)  $\tan \theta < 0$  and  $\sin \theta < 0$  27) \_\_\_\_\_

Decide whether the statement is possible or impossible for an angle  $\theta$ .

28)  $\sec \theta = -0.41$  28) \_\_\_\_\_

Use the fundamental identities to find the value of the trigonometric function.

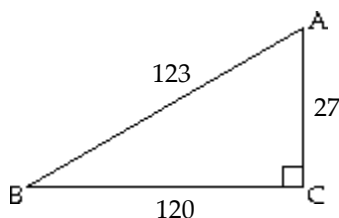
29) Find  $\csc \theta$ , given that  $\sin \theta = -\frac{2}{3}$  and  $\theta$  is in quadrant IV. 29) \_\_\_\_\_

30) Find  $\sec \theta$ , given that  $\tan \theta = 0.40402623$  and  $\theta$  is in quadrant I. 30) \_\_\_\_\_

31) Find  $\cos \theta$ , given that  $\sin \theta = -\frac{5}{13}$  and  $\theta$  is in quadrant III. 31) \_\_\_\_\_

Evaluate the function requested. Write your answer as a fraction in lowest terms.

32) 32) \_\_\_\_\_



Find  $\cos B$ .

Suppose ABC is a right triangle with sides of lengths a, b, and c and right angle at C. Find the unknown side length using the Pythagorean theorem and then find the value of the indicated trigonometric function of the given angle.

Rationalize the denominator if applicable.

33) Find  $\sin A$  when  $b = 27$  and  $c = 45$  33) \_\_\_\_\_

34) Find  $\cot A$  when  $a = 4$  and  $c = 7$ . 34) \_\_\_\_\_

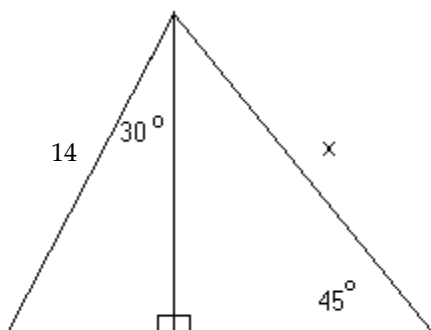
Without using a calculator, give the exact trigonometric function value with rational denominator.

35)  $\cos 60^\circ$  35) \_\_\_\_\_

36)  $\tan 60^\circ$  36) \_\_\_\_\_

Solve the problem.

37) Find the exact value of x in the figure. 37) \_\_\_\_\_



Write the function in terms of its cofunction. Assume that any angle in which an unknown appears is an acute angle.

38)  $\tan 24^\circ$  38) \_\_\_\_\_

Find a solution for the equation. Assume that all angles are acute angles.

39)  $\sin A = \cos 5A$  39) \_\_\_\_\_

40)  $\sec(\theta + 15^\circ) = \csc(2\theta + 9^\circ)$  40) \_\_\_\_\_

Decide whether the statement is true or false.

41)  $\tan 26^\circ > \cot 26^\circ$  41) \_\_\_\_\_

Solve the problem for the given information.

42) Find the equation of a line passing through the origin so that the sine of the angle between the line in quadrant I and the positive x-axis is  $\frac{\sqrt{3}}{2}$ . 42) \_\_\_\_\_

Find the reference angle for the given angle.

43)  $108^\circ$  43) \_\_\_\_\_

44)  $-26.1^\circ$  44) \_\_\_\_\_

**Find the exact value of the expression.**

45)  $\sec 45^\circ$  45) \_\_\_\_\_

46)  $\csc 330^\circ$  46) \_\_\_\_\_

47)  $\cot (-1215^\circ)$  47) \_\_\_\_\_

**Evaluate.**

48)  $3 \tan^2 60^\circ + 3 \sin^2 30^\circ - \cos^2 360^\circ$  48) \_\_\_\_\_

**Find the sign of the following.**

49)  $\tan (-\theta)$ , given that  $\theta$  is in the interval  $(90^\circ, 180^\circ)$ . 49) \_\_\_\_\_

**Find all values of  $\theta$ , if  $\theta$  is in the interval  $[0, 360^\circ)$  and has the given function value.**

50)  $\cos \theta = -\frac{\sqrt{3}}{2}$  50) \_\_\_\_\_

51)  $\sec \theta = -\sqrt{2}$  51) \_\_\_\_\_

**Use a calculator to find the function value. Give your answer rounded to seven decimal places, if necessary.**

52)  $\sec 57^\circ 31'$  52) \_\_\_\_\_

53)  $\cot 40^\circ 41'$  53) \_\_\_\_\_

**Find a value of  $\theta$  in  $[0^\circ, 90^\circ]$  that satisfies the statement. Leave answer in decimal degrees rounded to seven decimal places, if necessary.**

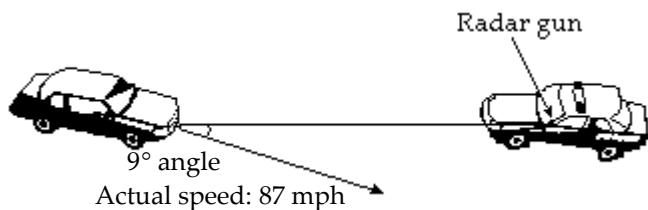
54)  $\sin \theta = 0.2239939$  54) \_\_\_\_\_

55)  $\sec \theta = 2.1411882$  55) \_\_\_\_\_

**Solve the problem.**

56) Any offset between a stationary radar gun and a moving target creates a "cosine effect" 56) \_\_\_\_\_

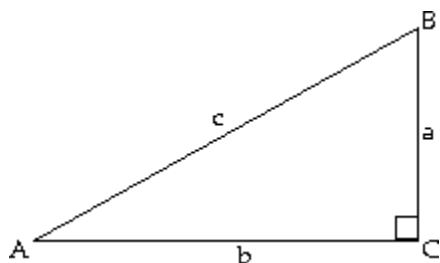
that reduces the radar mileage reading by the cosine of the angle between the gun and the vehicle. That is, the radar speed reading is the product of the actual reading and the cosine of the angle. Find the radar reading to the nearest hundredth for the auto shown in the figure.



Solve the right triangle. If two sides are given, give angles in degrees and minutes.

57)

57) \_\_\_\_\_

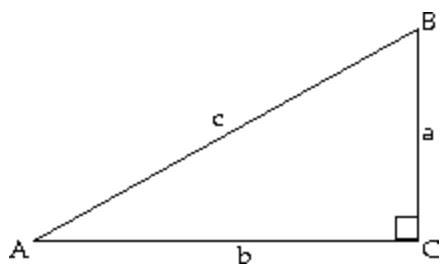


$$A = 17^\circ 39', c = 224 \text{ ft}$$

Round side lengths to two decimal places.

58)

58) \_\_\_\_\_



$$a = 20.3 \text{ cm}, b = 20.8 \text{ cm}$$

Round the missing side length to one decimal place.

**Solve the problem.**

59) On a sunny day, a tree and its shadow form the sides of a right triangle. If the hypotenuse is 40 meters long and the tree is 32 meters tall, how long is the shadow?

59) \_\_\_\_\_

60) From a boat on the river below a dam, the angle of elevation to the top of the dam is  $22^\circ 56'$ . If the dam is 1688 feet above the level of the river, how far is the boat from the base of the dam (to the nearest foot)?

60) \_\_\_\_\_

**An observer for a radar station is located at the origin of a coordinate system. For the point given, find the bearing of an airplane located at that point. Express the bearing using both methods.**

61)  $(3, -3)$

61) \_\_\_\_\_

**Solve the problem.**

62) A fire is sighted due west of lookout A. The bearing of the fire from lookout B, 12.6 miles due south of A, is  $N 40^\circ 50' W$ . How far is the fire from B (to the nearest tenth of a mile)?

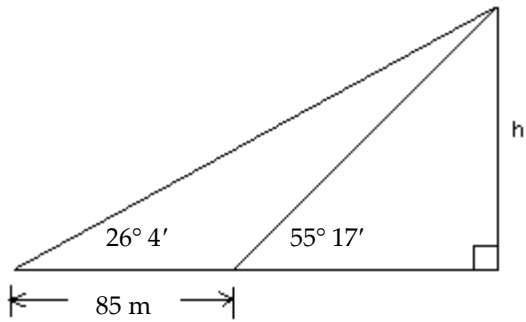
62) \_\_\_\_\_

63) Radio direction finders are set up at points A and B, 8.68 mi apart on an east-west line. From A it is found that the bearing of a signal from a transmitter is  $N 54.3^\circ E$ , while from B it is  $N 35.7^\circ W$ . Find the distance of the transmitter from B, to the nearest hundredth of a mile.

63) \_\_\_\_\_

64) Find  $h$  as indicated in the figure. Round to the nearest meter.

64) \_\_\_\_\_



65) Bob is driving along a straight and level road straight toward a mountain. At some point on his trip he measures the angle of elevation to the top of the mountain and finds it to be  $22^\circ 39'$ . He then drives 1 mile (1 mile = 5280 ft) more and measures the angle of elevation to be  $33^\circ 58'$ . Find the height of the mountain to the nearest foot.

65) \_\_\_\_\_

## Answer Key

Testname: MATH1316 CH.1-2 REVIEW

- 1)  $77^\circ$
- 2)  $50^\circ 43' 10''$
- 3)  $108^\circ$  and  $72^\circ$
- 4)  $57^\circ 40'$
- 5)  $56.60^\circ$
- 6)  $140^\circ 32' 24''$
- 7)  $244^\circ$
- 8)  $475^\circ$  and  $-245^\circ$



- 9) 6.2 revolutions per second
- 10)  $40^\circ$ ,  $39^\circ$ ,  $101^\circ$
- 11)  $45^\circ 19'$
- 12) Obtuse, scalene
- 13)  $x = 21$
- 14) 203.3 km
- 15)  $\frac{4}{5}$
- 16)  $\frac{5}{6}$
- 17)  $\frac{\sqrt{89}}{8}$
- 18) Undefined
- 19) 0
- 20) Negative
- 21) 1
- 22) -7
- 23)  $-\frac{1}{4}$
- 24)  $\frac{6\sqrt{5}}{5}$
- 25) positive and positive
- 26) Quadrant III
- 27) Quadrant IV
- 28) Impossible
- 29)  $-\frac{3}{2}$
- 30) 1.0785347
- 31)  $-\frac{12}{13}$
- 32)  $\cos B = \frac{40}{41}$
- 33)  $\frac{4}{5}$



## Answer Key

Testname: MATH1316 CH.1-2 REVIEW

34)  $\frac{\sqrt{33}}{4}$

35)  $\frac{1}{2}$

36)  $\sqrt{3}$

37)  $7\sqrt{6}$

38)  $\cot 66^\circ$

39)  $15^\circ$

40)  $22^\circ$

41) False

42)  $y = \sqrt{3}x$

43)  $72^\circ$

44)  $26.1^\circ$

45)  $\sqrt{2}$

46) -2

47) 1

48)  $\frac{35}{4}$

49) positive

50)  $150^\circ$  and  $210^\circ$

51)  $135^\circ$  and  $225^\circ$

52) 1.8620093

53) 1.1632916

54)  $12.9437229^\circ$

55)  $62.1582940^\circ$

56) 85.93 mph

57)  $B = 72^\circ 21'$ ;  $a = 67.92$  ft;  $b = 213.46$  ft

58)  $A = 44^\circ 18'$ ;  $B = 45^\circ 42'$ ;  $c = 29.1$  cm

59) 24 m

60) 3990 ft

61)  $135^\circ$ ; S  $45^\circ$  E

62) 16.7 mi

63) 5.07 mi

64) 63 m

65) 5789 ft