

Student: _____
Date: _____
Time: _____

Instructor: Andy Davis
Course: MATH 130 -
TRIGONOMETRY (4 UNITS) Fall
2008
Book: Sullivan: Trigonometry: A Unit
Circle Approach, 8e

Assignment: Homework 1: Triangles,
Distance and Circles

1.

The lengths of the legs of a right triangle are given. Find the hypotenuse.

$$a = 10, b = 24$$

$$c = \square$$

2.

The lengths of the legs of a right triangle are given. Find the hypotenuse.

$$a = 32, b = 60$$

$$c = \square$$

3.

The lengths of the legs of a right triangle are given. Find the hypotenuse.

$$a = 6, b = 8$$

$$c = \square$$

4.

The lengths of the sides of a triangle are given. Determine if the triangle is a right triangle. If it is, identify the hypotenuse.

$$3, 4, 5$$

Is the triangle a right triangle?

- No
 Yes

What is the length of the hypotenuse?

- 3
 5
 4
 The triangle is not a right triangle.

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5.

The lengths of the sides of a triangle are given. Determine if the triangle is a right triangle. If it is, identify the hypotenuse.

5, 6, 8

Is the triangle a right triangle?

- No
 Yes

What is the length of the hypotenuse?

- 8
 6
 5
 The triangle is not a right triangle.

6.

Find the area A of a triangle with height **6** inches and base **5** inches.

$A = \square$ square inches

7.

Find the area A and circumference C of a circle of radius **9** meters.

$A = \square$ square meters
(Type an exact answer in terms of π .)

$C = \square$ meters
(Type an exact answer in terms of π .)

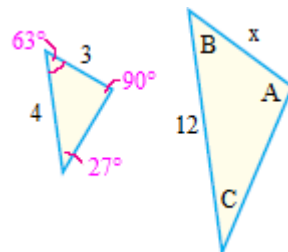
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8.

Given a pair of similar triangles, find the missing length x and the missing angles A, B, and C.



The missing length x is .

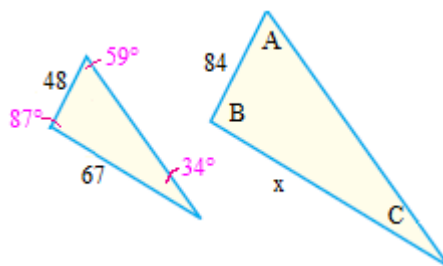
The measure of the angle A is °.

The measure of the angle B is °.

The measure of the angle C is °.

9.

Given a pair of similar triangles, find the missing length x and the missing angles A, B, and C.



The missing length x is .

The measure of the angle A is °.

The measure of the angle B is °.

The measure of the angle C is °.

10.

How many feet does a wheel with a diameter of 12 inches travel after **four** revolutions?

The distance traveled in **four** revolutions is approximately feet.
(Round to two decimal places as needed.)

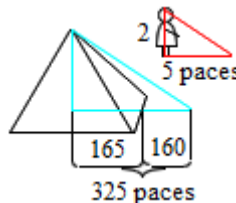
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11.

An ancient philosopher calculated the height of a pyramid by means of shadow reckoning. He knew that each side of the base of the pyramid was **330** paces and that his own height was **2** paces. He measured the length of the pyramid's shadow to be **160** paces and determined the length of his shadow to be **5** paces. Using similar triangles, determine the height of the pyramid in terms of the number of paces.



The height of the pyramid is paces.

12.

Use the fact that the radius of Earth is 3960 miles and 1 mile is 5280 feet to answer the following question.

A tower of a submarine is approximately **19** feet above sea level. How far can a person see from the top of the tower?

From the top of the **19**-foot tower on the submarine a person can see approximately miles.

(Round to the nearest hundredth as needed.)

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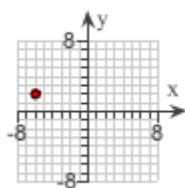
Assignment: Homework 1: Triangles,
Distance and Circles

13.

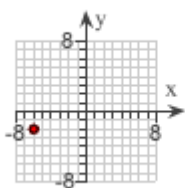
Plot points, A, B, and C, in the xy -plane. Tell in which quadrant or on what coordinate axis each point lies.

(a) Choose the graph that correctly plots the point $(-6, 2)$.

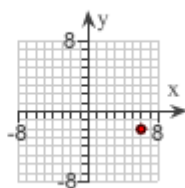
A.



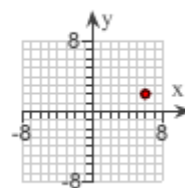
B.



C.



D.



In which quadrant does the point $(-6, 2)$ lie?

quadrant III

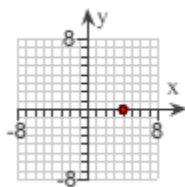
quadrant II

quadrant IV

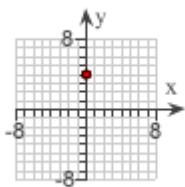
quadrant I

(b) Choose the graph that correctly plots the point $(4, 0)$.

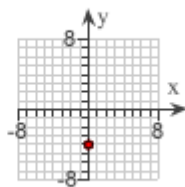
A.



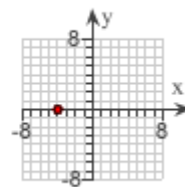
B.



C.



D.



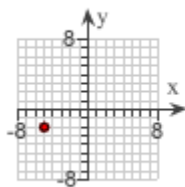
On which coordinate axis does the point $(4, 0)$ lie?

x-axis

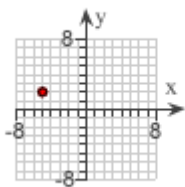
y-axis

(c) Choose the graph that correctly plots the point $(-5, -2)$.

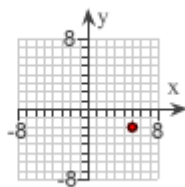
A.



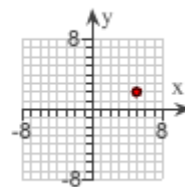
B.



C.



D.



In which quadrant does the point $(-5, -2)$ lie?

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13.
(cont.)

- quadrant II
 quadrant I

- quadrant IV
 quadrant III

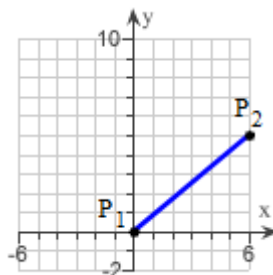
14. Sorry, the layout for this question is not suitable for printing.

15.

Find the distance $d(P_1, P_2)$ between the
given points P_1 and P_2 .

$$P_1 = (0, 0)$$

$$P_2 = (6, 5)$$



$$d(P_1, P_2) = \square$$

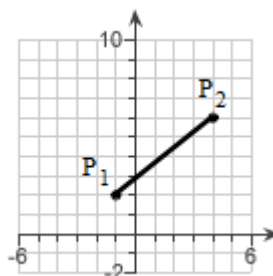
(Simplify your answer. Type an exact answer, using radicals as needed.)

16.

Find the distance $d(P_1, P_2)$ between the
given points P_1 and P_2 .

$$P_1 = (-1, 2)$$

$$P_2 = (4, 6)$$



$$d(P_1, P_2) = \square$$

(Simplify your answer. Type an exact answer, using radicals as needed.)

17.

Find the distance $d(P_1, P_2)$ between the points P_1 and P_2 .

$$P_1 = (-2, 2); P_2 = (1, 3)$$

$$d(P_1, P_2) = \square$$

(Simplify your answer. Type an exact answer, using radicals as needed.)

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18.

Find the distance $d(P_1, P_2)$ between the points P_1 and P_2 .

$$P_1 = (-1, 3)$$

$$P_2 = (5, 5)$$

$$d(P_1, P_2) = \square$$

(Simplify your answer. Type an exact answer, using radicals as needed.)

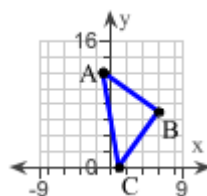
19.

Verify that the triangle ABC is a right triangle. Find its area.

$$A = (-1, 12)$$

$$B = (6, 7)$$

$$C = (1, 0)$$



Which of the following is a true statement about triangle ABC?

- A. $[d(A,B)]^2 = [d(B,C)]^2 + [d(A,C)]^2$
 B. $[d(B,C)]^2 = [d(A,B)]^2 + [d(A,C)]^2$
 C. $[d(A,C)]^2 = [d(B,C)]^2 + [d(A,B)]^2$
 D. None of the above are true statements.

Is triangle ABC a right triangle?

- Yes
 No

What is the area of the triangle?

Area = \square square units

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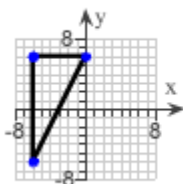
20.

Plot each point and form the right triangle ABC. Verify that the triangle is a right triangle. Find its area.

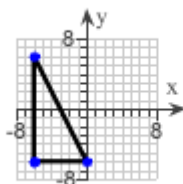
$$A = (6, -6); \quad B = (0, -6); \quad C = (6, 6)$$

Choose the correct graph below that shows points A, B, C, and triangle ABC.

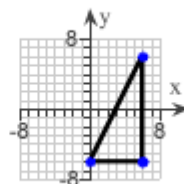
A.



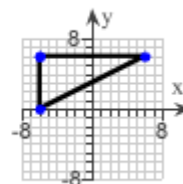
B.



C.



D.



To show that the triangle is a right triangle, show that the sum of the squares of the lengths of two of the sides (the legs) equals the square of the length of the third side (the hypotenuse).

Sum of the squares of the lengths of the legs of the triangle =

Square of the length of the hypotenuse of the triangle =

Find the area of the triangle.

Area = square units

21.

Find all points having an x-coordinate of 3 whose distance from the point $(-1, -5)$ is 5.

The point(s) is(are) .

(Type an ordered pair. Use a comma to separate answers as needed.)

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22.

Find the length of each side of the triangle determined by the three points P_1 , P_2 , and P_3 . State whether the triangle is an isosceles triangle, a right triangle, neither of these, or both. (An isosceles triangle is one in which at least two of the sides are of equal length.)

$$P_1 = (-4, 8); P_2 = (2, 2); P_3 = (-1, -1)$$

The length of side P_1P_2 is .
(Type an exact answer, using radicals as needed.)

The length of side P_2P_3 is .
(Type an exact answer, using radicals as needed.)

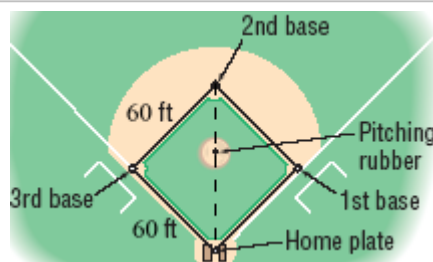
The length of side P_1P_3 is .
(Type an exact answer, using radicals as needed.)

Is the triangle an isosceles triangle, a right triangle, neither of these, or both?

- The triangle is an isosceles triangle but not a right triangle.
- The triangle is a right triangle but not an isosceles triangle.
- The triangle is both a right triangle and an isosceles triangle.
- The triangle is neither an isosceles triangle nor a right triangle.

23.

A Little League baseball "diamond" is actually a square, 60 feet on a side (see the figure). What is the distance directly from home plate to second base (the diagonal of the square)?



The distance directly from home plate to second base is approximately feet.
(Type an integer or decimal rounded to two decimal places as needed.)

24.

Two vehicles, a car and a truck, leave an intersection at the same time. The car heads east at an average speed of 70 miles per hour, while the truck heads south at an average speed of 20 miles per hour. Find an expression for their distance apart d (in miles) at the end of t hours.

At the end of t hours, the two vehicles are miles apart.
(Type an exact answer, using radicals as needed.)

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25.

Write the standard form of the equation and the general form of the equation of the circle with radius r and center (h,k) . Then graph the circle.

$$r = 1; \quad (h,k) = (-1,0)$$

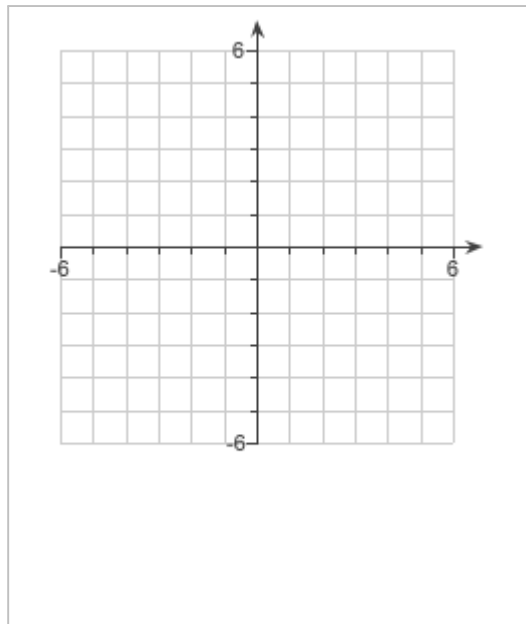
The standard form of the equation of the circle is .

(Simplify your answer.)

The general form of the equation of the circle is .

(Simplify your answer.)

Graph the circle.



26.

Find the standard form of the equation of the circle having the following properties:

Center at the point $(5,2)$
Tangent to the x -axis

Type the standard form of the equation of the circle.

(Type an equation.)

27.

A Ferris wheel has a maximum height of 242 feet and a wheel diameter of 230 feet. Find an equation for the wheel if the center of the wheel is on the y -axis.

Choose the correct answer below.

- A. $x^2 + (y - 472)^2 = 52,900$
- B. $x^2 + (y - 357)^2 = 52,900$
- C. $x^2 + (y - 127)^2 = 13,225$
- D. $(x - 472)^2 + y^2 = 52,900$
- E. $x^2 + (y - 242)^2 = 13,225$
- F. $(x - 127)^2 + y^2 = 13,225$