PRACTICE & PROBLEM SOLVING

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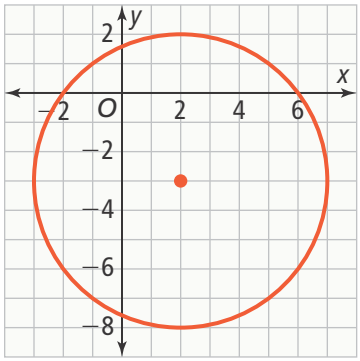
Practice Tutorial

Additional Exercises Available Online

UNDERSTAND

11. Use Structure Write an equation of the circle shown in the graph.



12. Look for Relationships The equation of a circle is $(x + 9)^2 + (y - 4)^2 = 17$. What is the area of the circle, in terms of π?

13. Error Analysis Describe and correct the error a student made in describing the translation of the circle.

original equation: $x^2 + y^2 = 3$
translated equation: $(x + 2)^2 + (y - 2)^2 = 3$

translations:
2 units right
2 units down

✗

14. Use Structure Write an equation of a circle with center (−4, 5) and diameter of length $4\sqrt{3}$.

15. Reason The equation of a circle is $x^2 + y^2 = 36$.

a. What are the x-intercepts of the circle?

b. What are the y-intercepts of the circle?

16. Higher Order Thinking Write an equation of a circle that is tangent to the x-axis at (4, 0) and the y-axis at (0, 4).

17. Look for Relationships Does the equation $x^2 + y^2 = 0$ represent a circle? Why or why not?

PRACTICE

18. Write the equation of a circle with radius 2.2 and center at the origin. SEE EXAMPLE 1

Find an equation of each circle described. Sketch the graph. SEE EXAMPLE 2

19. center (0, 0) and radius 2

20. center (2, 4) and radius 3

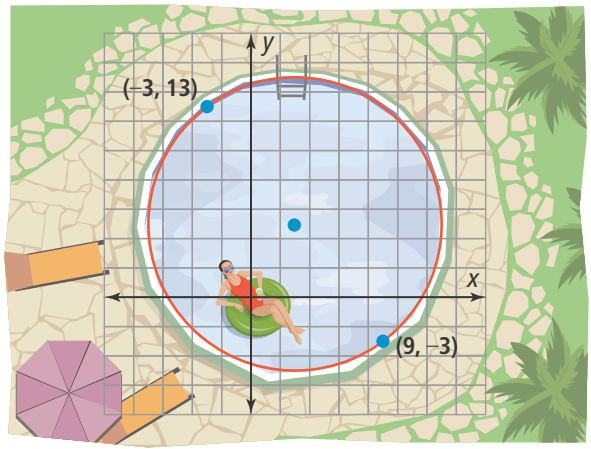
21. center (−1, 3) and radius 5

22. center (−5, −3) and radius 4

23. center (0, −3) and radius $\sqrt{7}$

24. center (−4, 1) and radius $\frac{3}{2}$

25. Diego wants to place a circular pool in his backyard. He has already decided the pool wall will include the endpoints of a diameter, (−3, 13) and (9, −3), on the grid of his backyard. What equation describes the location of the swimming pool wall? SEE EXAMPLE 3



Verify that the equation is an equation of a circle. Identify its center and radius. SEE EXAMPLE 4

26. $x^2 + y^2 + 6x + 4y + 9 = 0$

27. $x^2 + y^2 + 10x - 2y + 1 = 0$

28. $x^2 + y^2 - 12x + 8y + 3 = 0$

29. $x^2 + y^2 - 4x - 8y - 5 = 0$

Solve the linear-quadratic system of equations. SEE EXAMPLE 5

30. $y = x$
$x^2 + y^2 = 8$

31. $y = \frac{3}{2}x$
$x^2 + y^2 = 13$

32. $7y + x = -25$
$x^2 + y^2 = 25$

33. $x + 2y = 0$
$x^2 + y^2 = 20$

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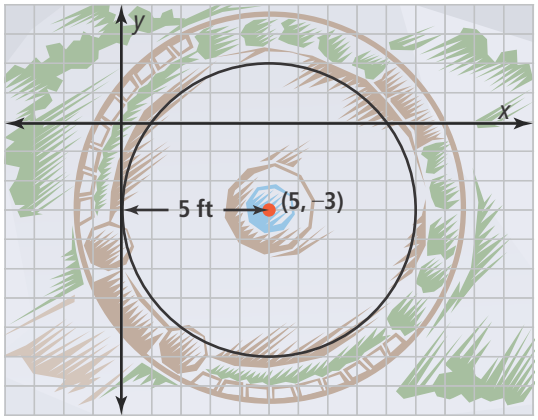
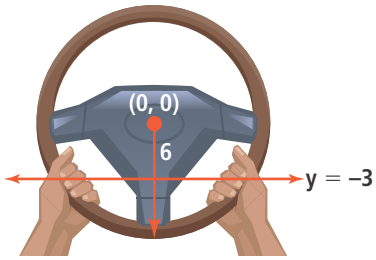
Practice Tutorial
Mixed Review Available Online

APPLY

34. Model With Mathematics Keenan sketches a circular stone patio on grid paper. Write an equation to model the circular outline of the patio.



35. Reason A driving instructor showed students where they should place their hands on a steering wheel while driving a car.



a. Write an equation that represents the steering wheel.

b. At what coordinates should a driver place the center of their hands on a steering wheel?

36. Model With Mathematics A cell phone tower is 32 mi east and 20 mi north of Talisha's house, represented by the point (0, 0) on a coordinate plane. A typical cell phone can be reached by the signal from a cell phone tower that has a 40 mi radius.

a. What point represents the cell phone tower?

b. Write an equation that represents the farthest points the signal from the cell phone tower can reach.

c. Graph the location of Talisha's house, the cell phone tower, and the range of the cell phone tower.

d. Does Talisha live within the range to receive the signal from the cell phone tower? Explain.

ASSESSMENT PRACTICE

37. Write the equation of the circle given by the equation $x^2 + y^2 + 2x - 14y - 6 = 8$ in standard form. Identify the center and radius. Then sketch the graph.

Standard form: $(x - \_\_\_)^2 + (y - \_\_\_)^2 = \_\_\_$

Center: (___, ___)

Radius: ___

38. SAT/ACT The equation of a circle is $(x + 2)^2 + (y - 8)^2 = 81$. What is the circumference of the circle?

Ⓐ 3π
Ⓑ 6π
Ⓒ 9π
Ⓓ 18π
Ⓔ 81π

39. Performance Task Venetta wants to write the standard form of the equation of a circle given the circle's diameter d. The table shows the center and diameter of four different circles.

Circle	Center (h, k)	Diameter, d
1	(0, 0)	8
2	(1, −2)	10
3	(−3, 6)	12
4	(−4, −7)	32

Part A Write an equation of each of the four circles.

Part B Write the standard form of the equation of a circle with center (h, k) and diameter d.