

# Reteaching 11-5

## Circles in the Coordinate Plane

**OBJECTIVE:** Writing the equation of a circle

**MATERIALS:** None

### Example

Find the equation of the circle whose center is  $(-5, 2)$  and that passes through  $(3, 3)$ .

Use the center and point to find the radius.

$$r = \sqrt{(-5 - 3)^2 + (2 - 3)^2} \quad \text{Distance Formula}$$

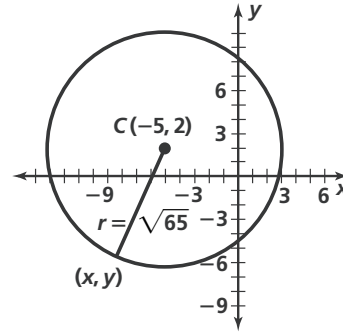
$$r = \sqrt{(-8)^2 + (-1)^2}$$

$$r = \sqrt{65}$$

With  $r = \sqrt{65}$  and center at  $(-5, 2)$ , the circle has the equation

$$(x - (-5))^2 + (y - 2)^2 = (\sqrt{65})^2.$$

Simplified, this becomes  $(x + 5)^2 + (y - 2)^2 = 65$ .



### Exercises

Find the equation of the circle whose center and radius are given.

- |                                   |                                    |  |
|-----------------------------------|------------------------------------|--|
| 1. center $(3, 11)$<br>radius = 2 | 2. center $(-5, 0)$<br>radius = 15 | 3. center $(6, -6)$<br>radius = $\sqrt{7}$ |
|-----------------------------------|------------------------------------|--|

Find the equation of the circle that passes through the point  $(-2, -4)$  with the given center.

- |              |                |              |
|--------------|----------------|--------------|
| 4. $C(0, 0)$ | 5. $C(-2, -2)$ | 6. $C(3, 1)$ |
|--------------|----------------|--------------|

Find the equation of each circle described.

- The circle has center  $(5, 2)$  and diameter 12.
- The endpoints of the circle's diameter are the points  $(4, -3)$  and  $(4, 7)$ .
- The endpoints of the circle's diameter are the points  $(2, 6)$  and  $(-6, 0)$ .

Identify the center and radius of each circle.

- |                                  |   |
|----------------------------------|---|
| 10. $(x + 3)^2 + (y + 5)^2 = 25$ | 11. $x^2 + y^2 = 0.04$                              |
| 12. $(x - 4)^2 + y^2 = 6$        | 13. $\frac{(x - 3)^2}{2} + \frac{(y - 5)^2}{2} = 8$ |