

Reteaching 11-5

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.

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

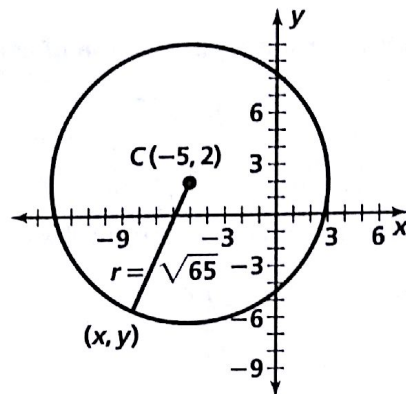
$$r = \sqrt{(-8)^2 + (-1)^2}$$

$$r = \sqrt{65}$$

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 $(3, 11)$
radius = 2

2. center $(-5, 0)$
radius = 15

3. center $(6, -6)$
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.

7. The circle has center $(5, 2)$ and diameter 12.

8. The endpoints of the circle's diameter are the points $(4, -3)$ and $(4, 7)$.

9. 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. $\frac{(x - 3)^2}{2} + \frac{(y - 5)^2}{2} = 8$