

10-8

Skills Practice

Equations of Circles

Write an equation for each circle.

1. center at origin, $r = 6$

$$x^2 + y^2 = 36$$

2. center at $(0, 0)$, $r = 2$

$$x^2 + y^2 = 4$$

3. center at $(4, 3)$, $r = 9$

$$(x-4)^2 + (y-3)^2 = 81$$

4. center at $(7, 1)$, $d = 24$ $r = 12$

$$(x-7)^2 + (y-1)^2 = 144$$

5. center at $(-5, 2)$, $r = 4$

$$(x+5)^2 + (y-2)^2 = 16$$

6. center at $(6, -8)$, $d = 10$ $r = 5$

$$(x-6)^2 + (y+8)^2 = 25$$

7. a circle with center at $(8, 4)$ and a radius with endpoint $(0, 4)$

$$(x-8)^2 + (y-4)^2 = 64$$

$$r = 8$$

8. a circle with center at $(-2, -7)$ and a radius with endpoint $(0, 7)$

$$(x+2)^2 + (y+7)^2 = 200$$

$$r = \sqrt{200}$$

$$\sqrt{(-2-0)^2 + (-7-7)^2}$$

$$= \sqrt{-2^2 + -14^2}$$

9. a circle with center at $(-3, 9)$ and a radius with endpoint $(1, 9)$

$$(x+3)^2 + (y-9)^2 = 16$$

$$r = 4$$

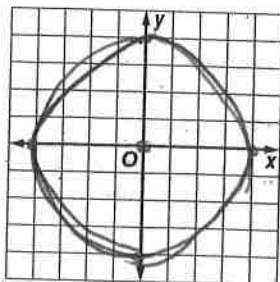
10. a circle whose diameter has endpoints $(-3, 0)$ and $(3, 0)$

$$x^2 + y^2 = 9$$

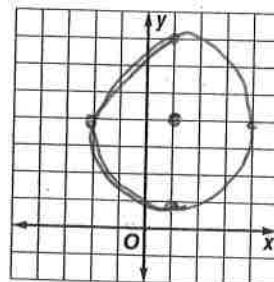
$$r = 3$$

Graph each equation.

11. $x^2 + y^2 = 16$



12. $(x-1)^2 + (y-4)^2 = 9$



10-8

Practice

Equations of Circles

Write an equation for each circle.

1. center at origin,
- $r = 7$

$$x^2 + y^2 = 49$$

2. center at
- $(0, 0)$
- ,
- $d = 18$

$$x^2 + y^2 = 81$$

3. center at
- $(-7, 11)$
- ,
- $r = 8$

$$(x+7)^2 + (y-11)^2 = 64$$

4. center at
- $(12, -9)$
- ,
- $d = 22$
- $r = 11$

$$(x-12)^2 + (y+9)^2 = 121$$

5. center at
- $(-6, -4)$
- ,
- $r = \sqrt{5}$

$$(x+6)^2 + (y+4)^2 = 5$$

6. center at
- $(3, 0)$
- ,
- $d = 28$
- $r = 14$

$$(x-3)^2 + y^2 = 196$$

7. a circle with center at
- $(-5, 3)$
- and a radius with endpoint
- $(2, 3)$

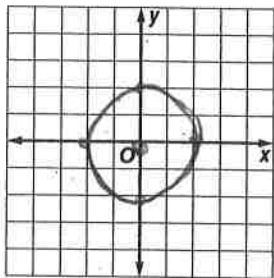
$$(x+5)^2 + (y-3)^2 = 49$$

8. a circle whose diameter has endpoints
- $(4, 6)$
- and
- $(-2, 6)$

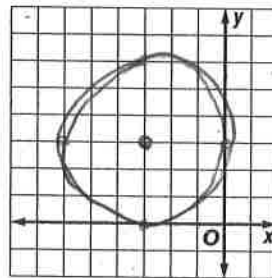
$$(x-1)^2 + (y-6)^2 = 9$$

Graph each equation.

- 9.
- $x^2 + y^2 = 4$



- 10.
- $(x + 3)^2 + (y - 3)^2 = 9$



11. **EARTHQUAKES** When an earthquake strikes, it releases seismic waves that travel in concentric circles from the epicenter of the earthquake. Seismograph stations monitor seismic activity and record the intensity and duration of earthquakes. Suppose a station determines that the epicenter of an earthquake is located about 50 kilometers from the station. If the station is located at the origin, write an equation for the circle that represents a possible epicenter of the earthquake.

$$x^2 + y^2 = 2500$$