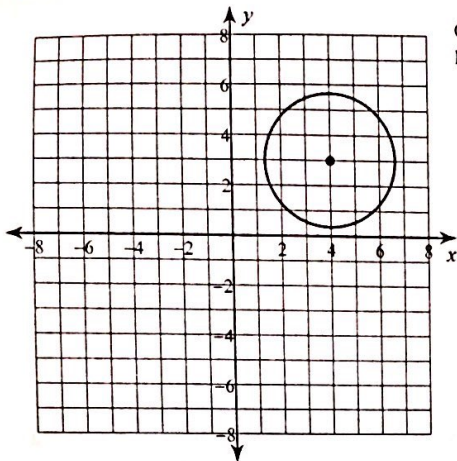
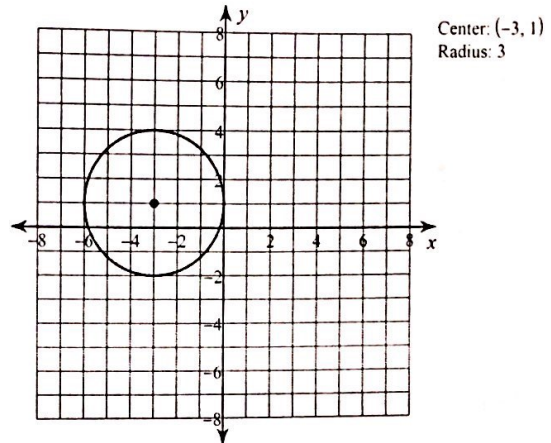


Identify the center and radius of each. Then sketch the graph.

$$1) (x - 4)^2 + (y - 3)^2 = 7$$



$$2) (x + 3)^2 + (y - 1)^2 = 9$$



Use the information provided to write the equation of each circle.

3) Center: $(8, 12)$
Radius: 3

$$(x - 8)^2 + (y - 12)^2 = 9$$

4) Center: $(0, -9)$
Radius: 3

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

5) Center: $(10, -8)$
Radius: 3

$$(x - 10)^2 + (y + 8)^2 = 9$$

6) Center: $\left(-\frac{23}{2}, \frac{27}{2}\right)$
Radius: 3

$$\left(x + \frac{23}{2}\right)^2 + \left(y - \frac{27}{2}\right)^2 = 9$$

7) Ends of a diameter: $(-1, 7)$ and $(-1, -5)$

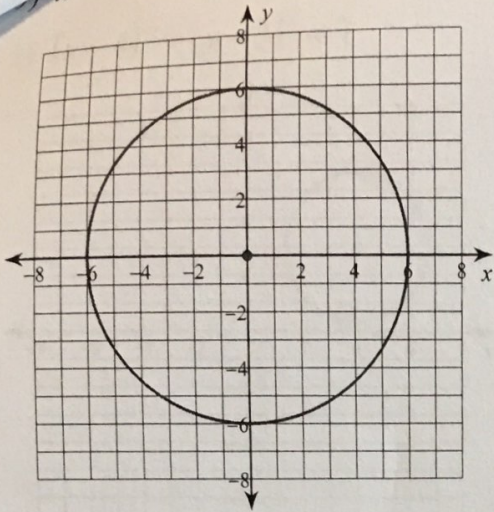
$$(x + 1)^2 + (y - 1)^2 = 36$$

8) Ends of a diameter: $(11, 5)$ and $(-11, -7)$

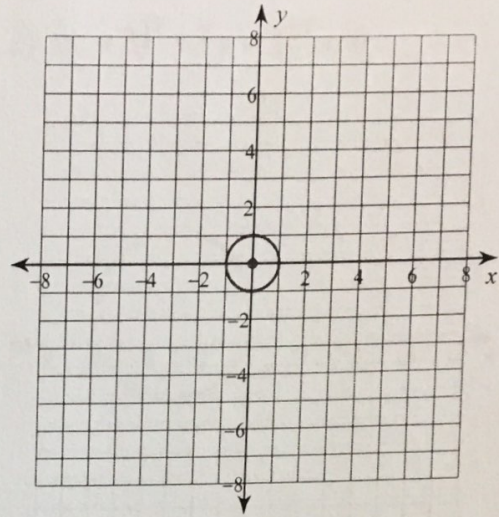
$$x^2 + (y + 1)^2 = 157$$

standard form, identify the center and the radius and graph.

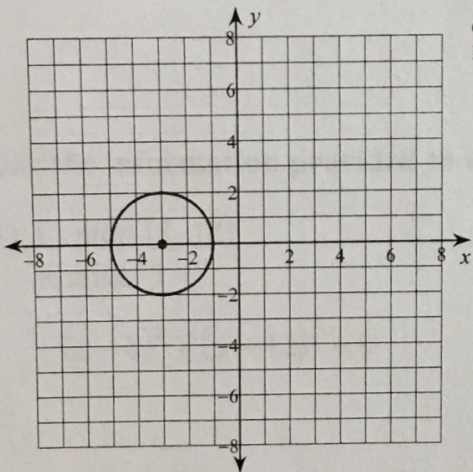
$$x^2 = -y^2 + 36$$



$$10) -1 + y^2 + x^2 = 0$$

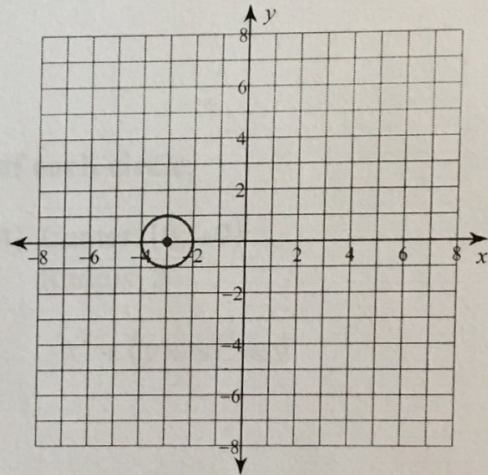


$$11) x^2 + y^2 + 5 = -6x$$



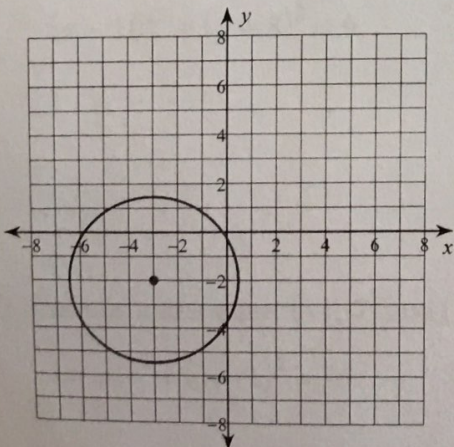
Center: $(-3, 0)$
Radius: 2

$$12) 8 + y^2 + 6x + x^2 = 0$$



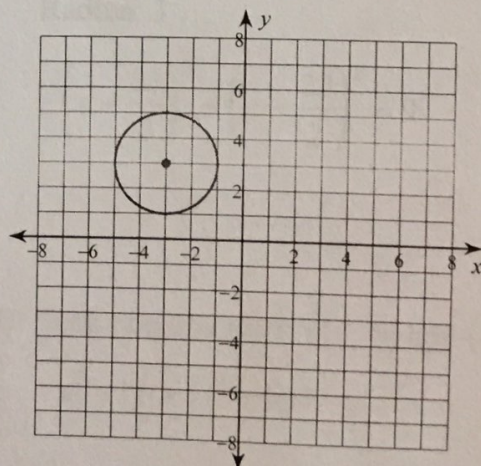
Center: $(-3, 0)$
Radius: 1

$$13) 0 = -x^2 - 1 - y^2 - 4y - 6x$$



Center: $(-3, -2)$
Radius: $2\sqrt{3}$

$$14) -6y + x^2 + y^2 + 6x + 14 = 0$$



Center: $(-3, 3)$
Radius: 2