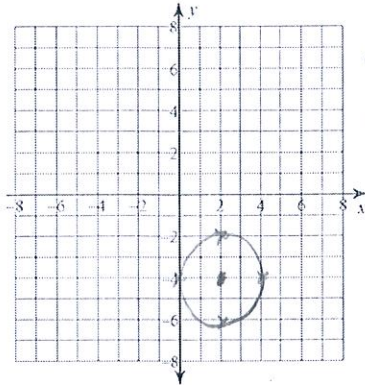


$$(x-h)^2 + (y-k)^2 = r^2$$

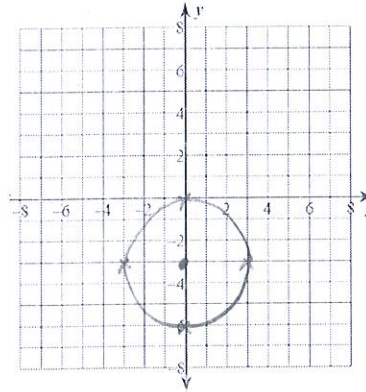
WARM UP: Identify the center and radius and then graph.

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



C: (2, -4)
r = 2

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



C: (0, -3)
r = 3

Write the equation of the circle given the center and radius or the graph.

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

$$(x+4)^2 + y^2 = 16$$

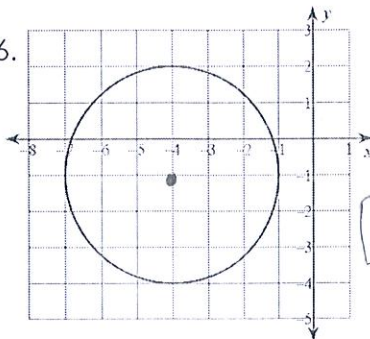
4. Center: $(-12, 6)$
Radius: 2

$$(x+12)^2 + (y-6)^2 = 4$$

5. Center: $(2, -14)$
Radius: $\sqrt{10}$

$$(x-2)^2 + (y+14)^2 = 10$$

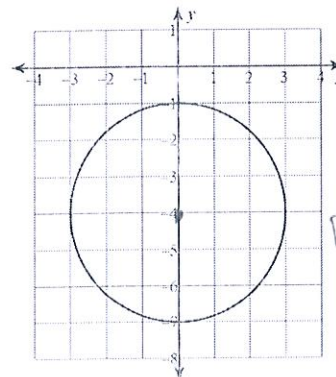
6.



C: (-4, -1)
r = 3

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

7.



C: (0, -4)
r = 3

$$x^2 + (y+4)^2 = 9$$

DISTANCE FORMULA: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

MIDPOINT FORMULA: $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

8. Using the distance formula, write the equation of a circle whose center is $(-2, 4)$ and goes through $(2, -1)$.



$$d = \sqrt{(2-(-2))^2 + (-1-4)^2}$$

$$= \sqrt{16+25}$$

$$= \sqrt{41} \text{ radius}$$

$$(x-(-2))^2 + (y-4)^2 = \sqrt{41}^2$$

$$(x+2)^2 + (y-4)^2 = 41$$

9. Give the equation whose endpoints of a diameter are $(-3, 4)$ and $(-5, -2)$.

$$M = \left(\frac{-3+(-5)}{2}, \frac{4+(-2)}{2} \right)$$

M = (-4, 1) Center

$$d = \sqrt{(-4-(-3))^2 + (1-4)^2}$$

$$= \sqrt{1+9}$$

$$= \sqrt{10} \text{ Radius}$$

$$(x-(-4))^2 + (y-1)^2 = \sqrt{10}^2$$

$$(x+4)^2 + (y-1)^2 = 10$$