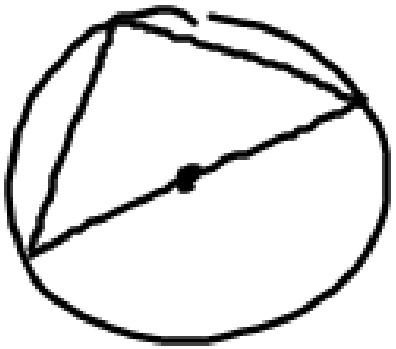
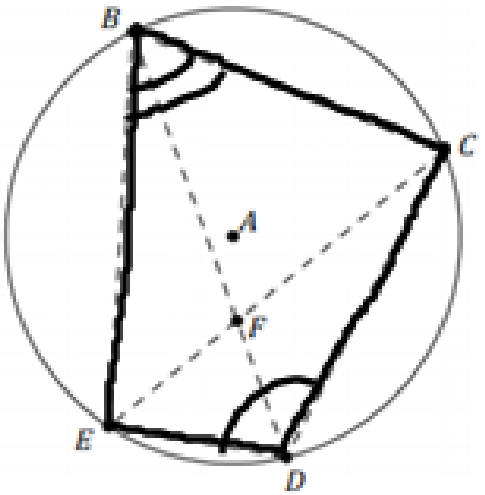
Informal Assessment:



Quadrilateral $BCDE$ is inscribed in circle A. Diagonals $\overline{BD}$ and $\overline{EC}$ intercept at point F.



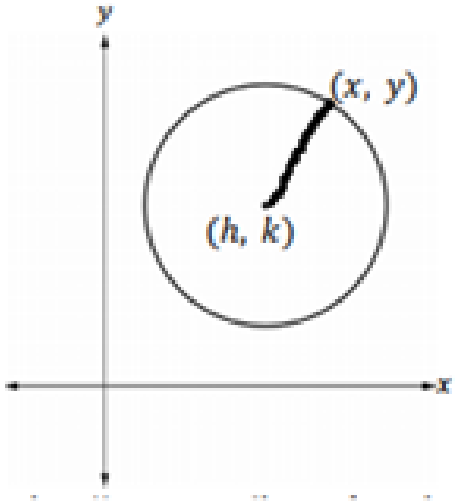
Select the angles and value that would make the statement true about quadrilateral $BCDE$.

$m\angle$ EDC = 180 − $m\angle$ EBC

EBF
EDC
EDF
CFD
FED

180°

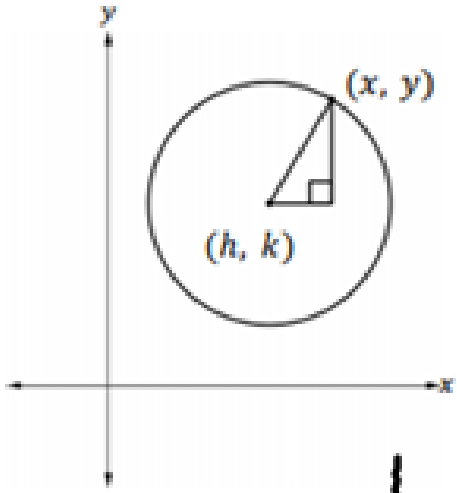
EBC
EBF
EDF
CFD
FED



To find the radius, you can use the distance formula

$$r = \sqrt{(x-h)^2 + (y-k)^2}$$

Now, we find the length of the hypotenuse and the horizontal and vertical legs of the triangle.



Horizontal leg length: $|x-h|$

Vertical leg length: $|y-k|$

Hypotenuse length: r

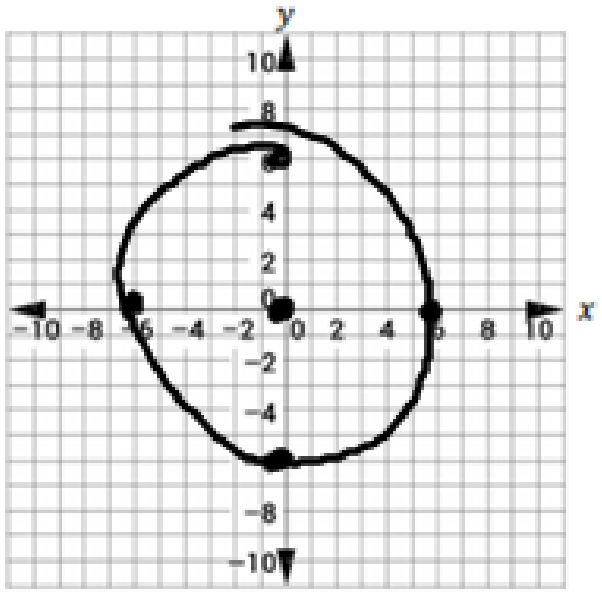
Substitute these lengths into the Pythagorean Theorem.

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

This is the standard form for the equation of a circle with center (h,k) and radius r.

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

Graph the equation $x^2 + y^2 = 36$.



$(0,0)$

$r=6$

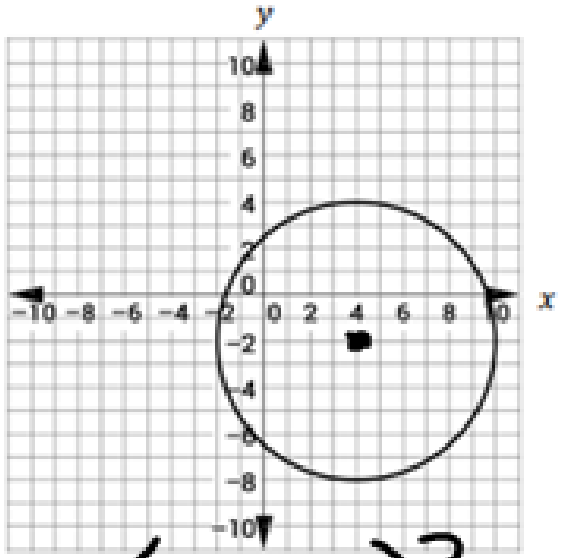
$$(x-h)^2+(y-k)^2=r^2$$

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

$(4,-2)$

$r=6$

Write the equation of the graphed circle.



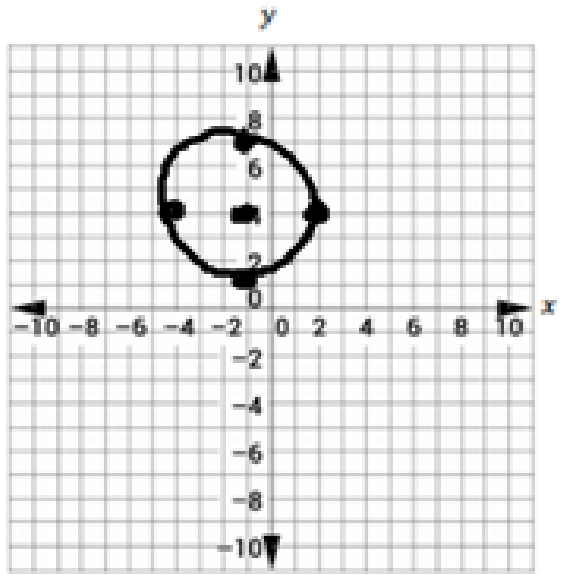
$$(x-4)^2+(y+2)^2=36$$

4. Graph each equation.

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

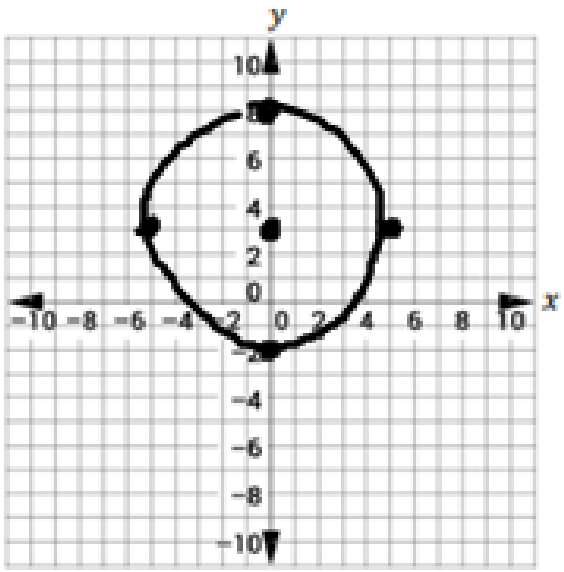
$(-1, 4)$

$r = 3$



b. $x^2 + (y-3)^2 = 25$

(0, 3)
r = 5

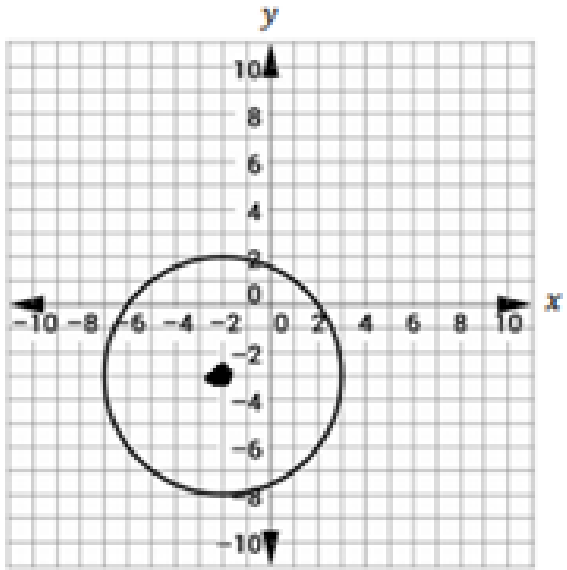


$$(x+2)^2 + (y+3)^2 = 25$$

$(-2, -3)$

$r = 5$

Write the equation of the graphed circle.



Informal Assessment:

radius = 4

Let $(5, -7)$ be the center of the circle and (x, y) be any point on the circle. Then, the horizontal distance from (x, y) to the center is

- $|x - 5|$.
- $|x + 5|$.
- $|x - 7|$.
- $|x + 7|$.

The vertical distance from (x, y) to the center is

- $|y - 5|$.
- $|y + 5|$.
- $|y - 7|$.
- $|y + 7|$.

The distance from (x, y) to the center is

- 2.
- 4.
- 12.
- 16.

Finally, the

- perimeter formula
- Pythagorean Theorem
- quadratic formula
- slope formula

can now be used to create an equation that shows the relationship between the horizontal distance, vertical distance, and distance of (x, y) to the center of the circle.

Consider the equation written in general form.

$x^2 + y^2 - 10y = 119$. How can we use completing the square to show that the equation resembles a circle?

$$x^2 + y^2 - 10y = 119$$

$$x^2 + y^2 - 10y + \left(\frac{-10}{2}\right)^2 = 119 + \left(\frac{-10}{2}\right)^2$$

$$x^2 + y^2 - 10y + 25 = 119 + 25$$

$$x^2 + (y-5)^2 = 144$$

Complete the square to transform the equation to standard form.
What is the center and the radius of the circle? Graph it.

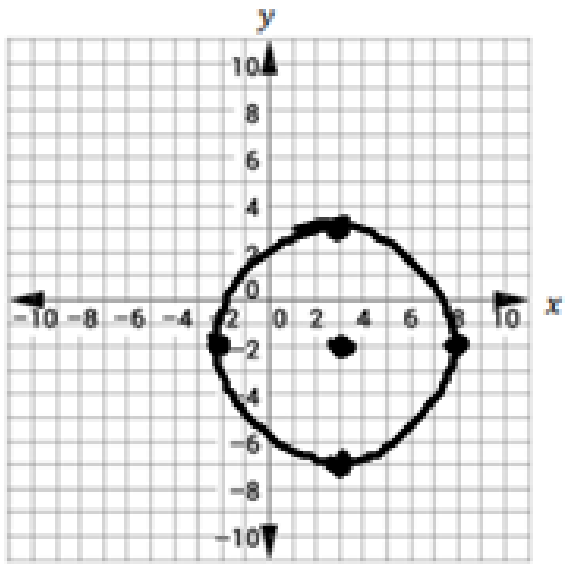
$x^2 + y^2 - 6x + 4y - 12 = 0$

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

$x^2 - 6x + \left(\frac{-6}{2}\right)^2 +$

$y^2 + 4y + \left(\frac{4}{2}\right)^2 =$

$12 + \left(\frac{-6}{2}\right)^2 + \left(\frac{4}{2}\right)^2$



$(3, -2)$

$r = 5$

$x^2 - 6x + 9 + y^2 + 4y + 4 = 12 + 9 + 4$

$(x-3)^2 + (y+2)^2 = 25$

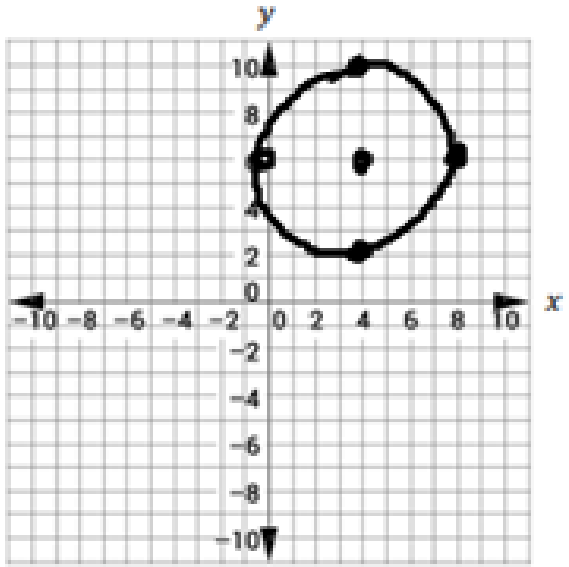
$x^2 + y^2 - 8x - 12y = -36$

$x^2 - 8x + y^2 - 12y = -36$

$x^2 - 8x + \left(\frac{-8}{2}\right)^2 +$

$y^2 - 12y + \left(\frac{-12}{2}\right)^2 =$

$-36 + \left(\frac{-8}{2}\right)^2 + \left(\frac{-12}{2}\right)^2$



$(4, 6)$

$r = 4$

$x^2 - 8x + 16 + y^2 - 12y + 36 = -36 + 16 + 36$

$(x - 4)^2 + (y - 6)^2 = 16$