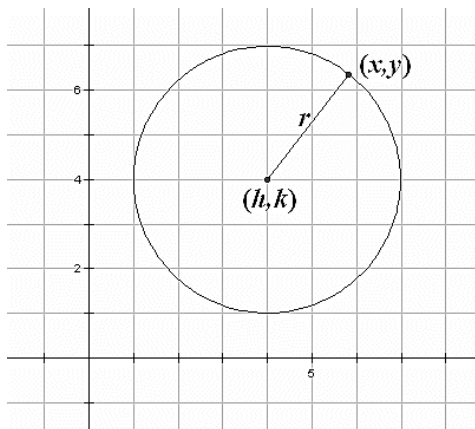


**Main Ideas/  
Questions**

Conic Circles  
Characteristics

**Notes**



**Conic Circles** – For Geometry, this just means a circle that is on a \_\_\_\_\_ plane.

Center: (                    )

Radius:

**FORMULA:**

Examples

1. Identify the center and radius from the following equation:  
$$x^2 + (y - 4)^2 = 100$$
2. Identify the center and radius from the following equation:  
$$(x + 8)^2 + (y - 4)^2 = 8$$
3. Write the equation of a circle that has a center of (2, 3) and a radius of 5.
4. Write the equation of a circle that has a center of (-3, 0) and a radius of  $\sqrt{17}$ .
5. Write the equation of a circle that has a center of (-2, 7) and a radius of  $9\sqrt{2}$ .

**Main Ideas/  
Questions**  
Graphing Conic  
Circles

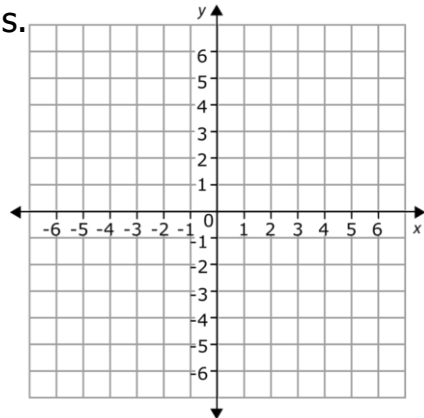
**Notes**

**Graphing Circle Equations**

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

**Step 1:** Find the center and radius.

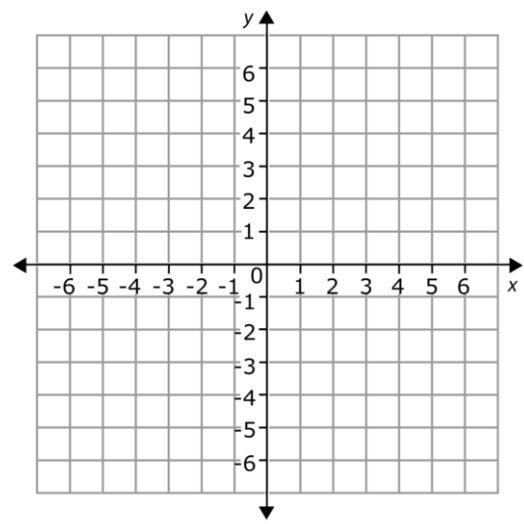
**Step 2:** Plot the center.



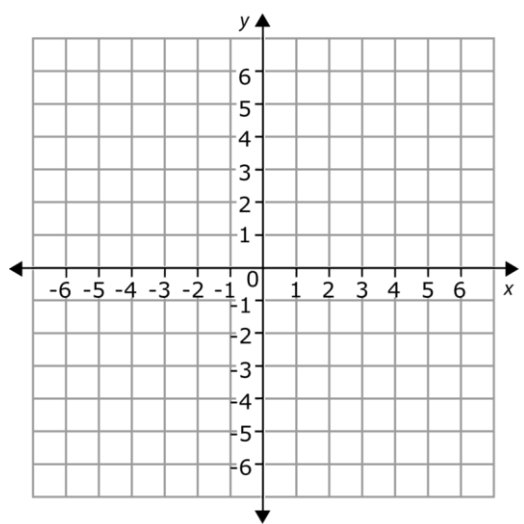
**Step 3:** Plot 4 points up, down, left, and right around the center using the radius length and connect in a circle.

Examples

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



2. Graph  $(x - 2)^2 + (y + 1)^2 = 8$



**Main Ideas/ Questions**

Creating Equations

**Using Completing the Square**

$$20x - 8y + 91 + y^2 = -x^2$$

1. Move ALL variables to one side to make  $x^2$  and  $y^2$  positive  
**AND** move all constants (no variables attached) to the other side

$$20x - 8y + y^2 + x^2 = -91$$

2. Group like variables together (x's together and y's together)

$$x^2 + 20x + y^2 - 8y = -91$$

3. Put 4 blanks (one after the x's, one after the y's, and 2 on the other side)

$$x^2 + 20x + \underline{\quad} + y^2 - 8y + \underline{\quad} = -91 + \underline{\quad} + \underline{\quad}$$

4. Use  $\left(\frac{b}{2}\right)^2$  for the middle terms (x and y, not  $x^2$  and  $y^2$ )

$$\left(\frac{20}{2}\right)^2 = (10)^2 = 100$$

$$\left(-\frac{8}{2}\right)^2 = (-4)^2 = 16$$

5. Fill in 2 blanks with first number and 2 blanks with the second number

$$x^2 + 20x + \underline{100} + y^2 - 8y + \underline{16} = -91 + \underline{100} + \underline{16}$$

6. Use the  $\frac{b}{2}$  numbers to factor x and y

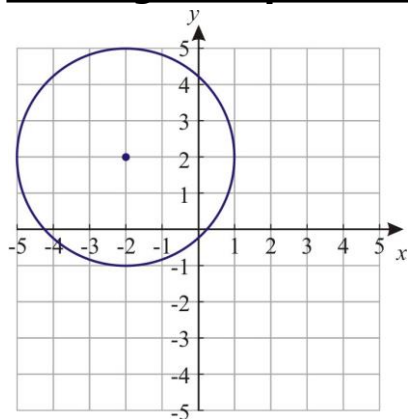
$$(x + 10)^2 + (y - 4)^2 =$$

7. Add all the numbers

$$(x + 10)^2 + (y - 4)^2 = 25$$

**Notes**

**Creating the Equation from the Graph**



**Find the center:**

**Calculate the radius:**

**Equation:**

Rewrite each general form into standard form. Identify the center and radius.

1)  $8x + x^2 - 2y = 64 - y^2$

2)  $137 + 6y = -y^2 - x^2 - 24x$

3)  $x^2 + y^2 + 14x - 12y + 4 = 0$

4)  $y^2 + 2x + x^2 = 24y - 120$