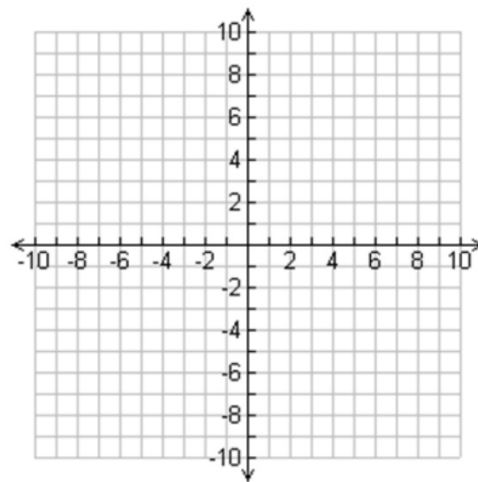
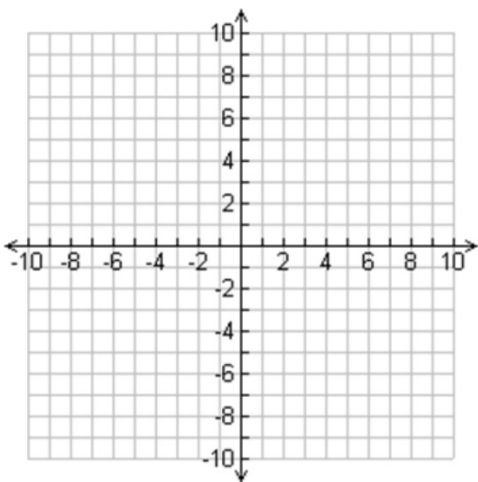


## Bellwork

Graph each of the following equations:

1.  $x^2 + (y - 4)^2 = 36$       2.  $(x + 1)^2 + (y + 6)^2 = 9$



## Completing the Square Review

Given an equation such as:

$$x^2 + bx + c = 0$$

Procedure:

1. Subtract  $c$  from both sides.
2. Divide the value of  $b$  by 2 and add it to both sides of the equation.
3. Rewrite the equation as:

$$\left(x + \frac{b}{2}\right)^2 = \left(\frac{b}{2}\right)^2 - c$$

## **Circles in General Form**

General Form of a circle:

$$x^2 + y^2 + Cx + Dy + E = 0$$

What can we do with this?

Put this equation into Standard Form!

How can we do that?

## **General Form to Standard Form**

Procedure:

1. Group the x terms together.
2. Group the y terms together.
3. Move any constants to the opposite side.
4. Complete the square on the x terms.
5. Complete the square on the y terms.
6. Write the equation in Standard form and simplify the side with no variables.
7. Graph the Standard Form equation.

## Examples

For the following example:

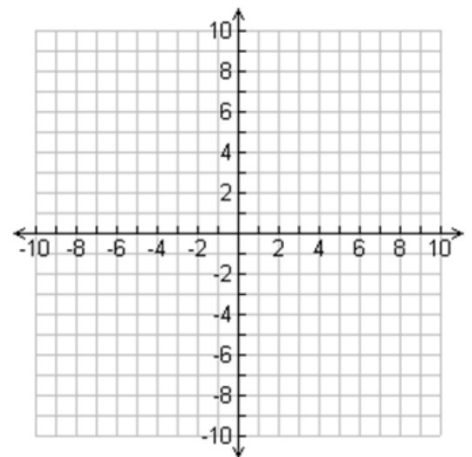
A. Write the equation in Standard Form

B. Identify the center.

C. Identify the radius.

D. Graph the circle.

1.  $x^2 + y^2 + 12x - 8y + 36 = 0$



## Examples

For the following example:

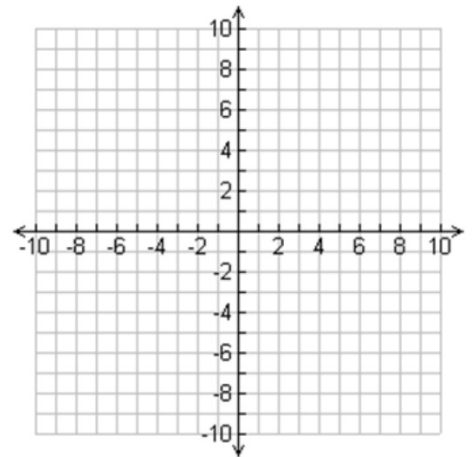
A. Write the equation in Standard Form

B. Identify the center.

C. Identify the radius.

D. Graph the circle.

2.  $8x^2 + 8y^2 + 16x - 24 = 0$



## Examples

For the following example:

- A. Write the equation in Standard Form
- B. Identify the center.
- C. Identify the radius.
- D. Graph the circle.

3.  $x^2 + y^2 = 16 + 6y$

