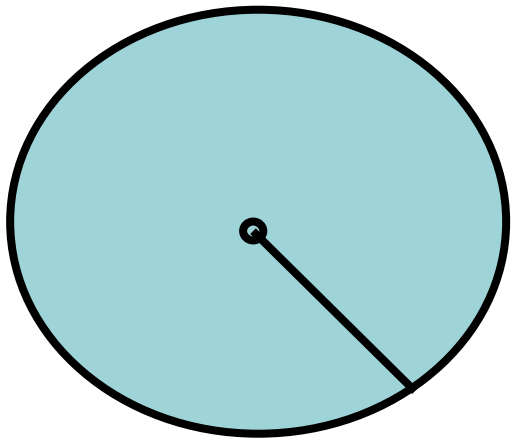


# **Graphing and Writing Equations of Circles**

# Standard Form of a Circle

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

**Center is at (h, k)**



*r is the radius  
of the circle*

# General Form of a Circle

$$Ax^2 + By^2 + Cx + Dy + E = 0$$

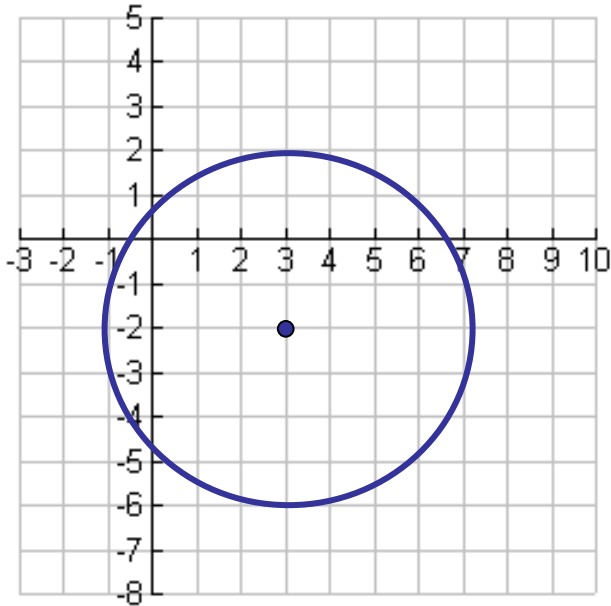
# General Form of a Circle

- *Every binomial squared has been multiplied out.*
- *Every term is on the **left** side, equal to 0.*
- *Squared terms go first in alpha order.*

**EX 1 Write an equation of a circle with center (3, -2) and a radius of 4.**

**h k**

**r**



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

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

$$(x - 3)^2 + (y + 2)^2 = 16$$

**EX 2** Write an equation of a circle with center  $(-4, 0)$  and a *diameter* of 10.

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

$$(x - (-4))^2 + (y - 0)^2 = 5^2$$

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

**EX 3** Write an equation of a circle with center  $(2, -9)$  and a *radius* of  $\sqrt{11}$ .

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

$$(x - 2)^2 + (y - (-9))^2 = (\sqrt{11})^2$$

$$(x - 2)^2 + (y + 9)^2 = 11$$

**EX 4 Find the coordinates of the center and the measure of the radius.**

**Opposite signs!**

$$(x - 6)^2 + (y + 3)^2 = 25$$

**(6, -3)**

**Radius 5**

**Take the square root!**

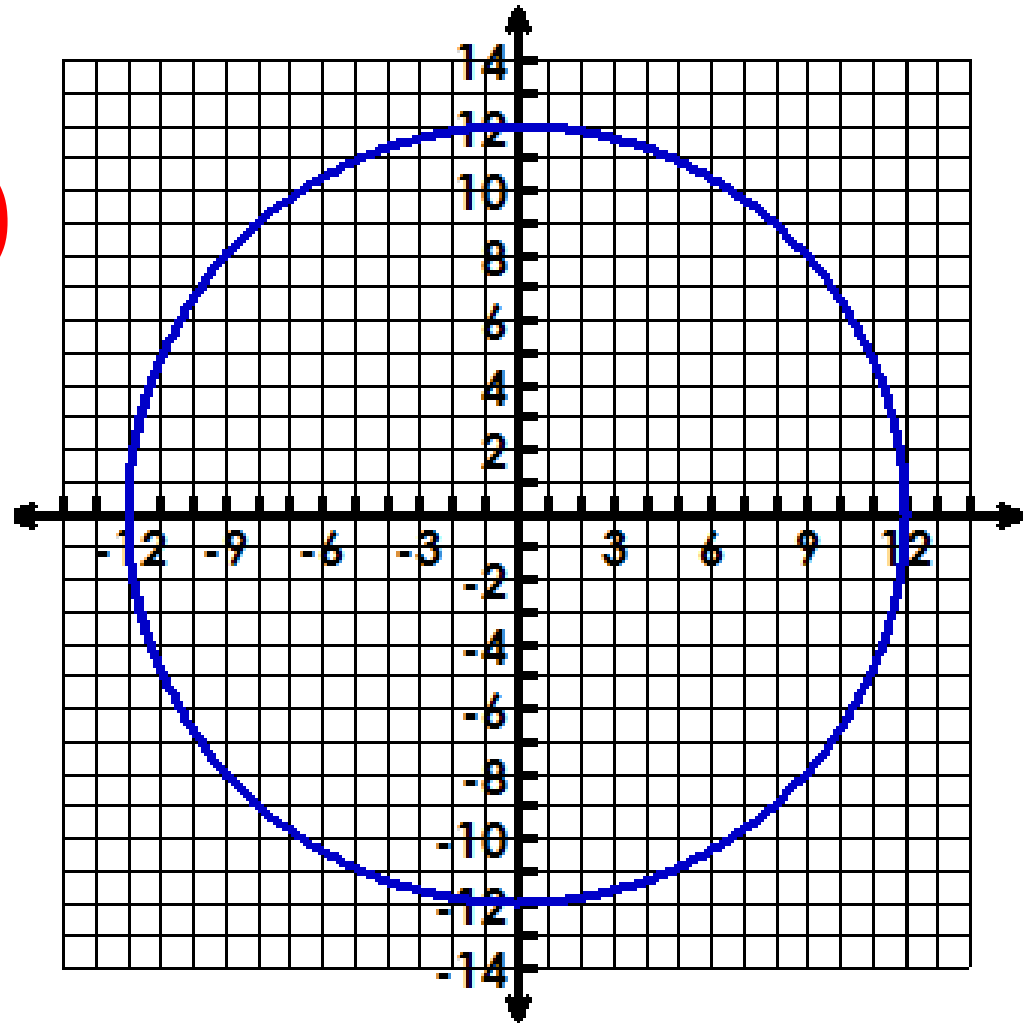


**5. Find the center, radius, & equation of the circle.**

**The center is  $(0, 0)$**

**The radius is  $12$**

**The equation is  $x^2 + y^2 = 144$**



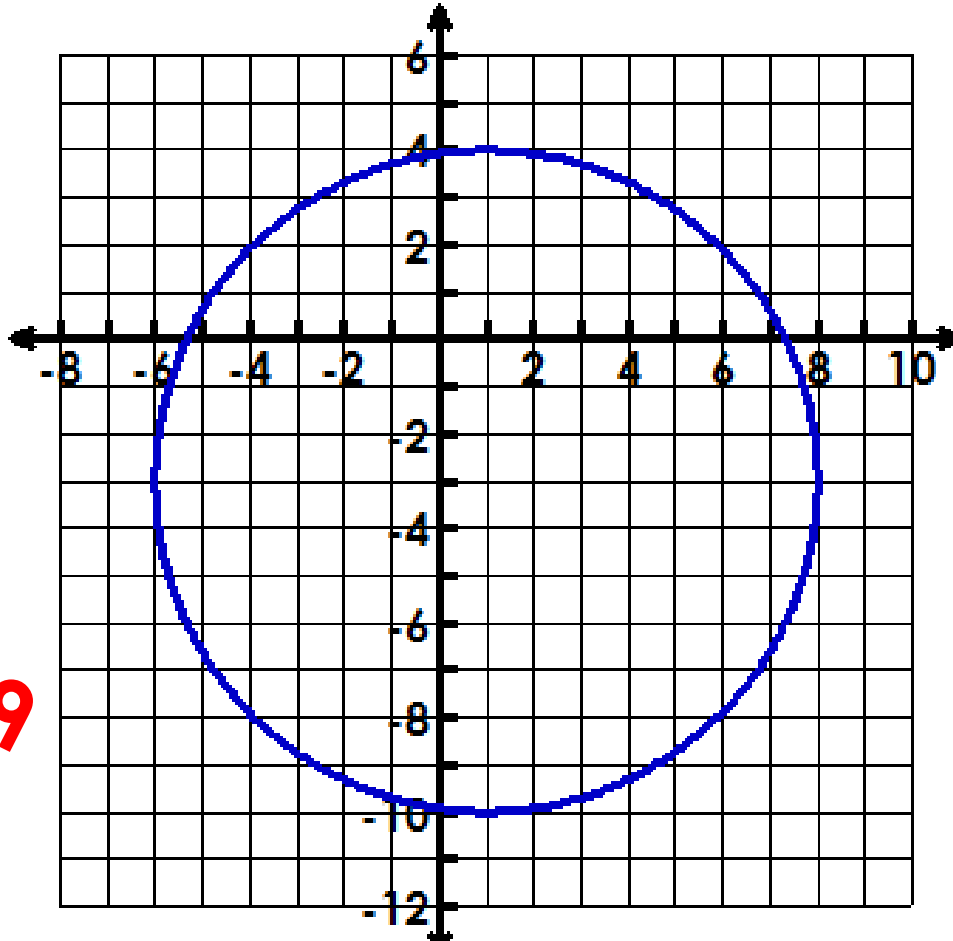
**6. Find the center, radius, & equation of the circle.**

**The center is  $(1, -3)$**

**The radius is  $7$**

**The equation is**

$$(x - 1)^2 + (y + 3)^2 = 49$$



# 7. Graph the circle, identify the center & radius.

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

Center **(3, 2)**

Radius of **3**

