

**Example 1.** Find the standard equation of the circle having a center at (2,3) and radius of 5 units.

Step 1.

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

Step 2.

$$(x - 2)^2 + (y - 3)^2 = 5^2$$

Step 3.

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

**Example 2.** Find the standard equation of the circle having a center at (3,-2) and radius of 2 units.

Step 1.

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

Step 2.

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

Step 3.

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

**Example 3.** Find the center and radius of the circle having a standard equation of  $(x + 1)^2 + (y - 4)^2 = 16$ .

Step 1:  $(x - h)^2 + (y - k)^2 = r^2$

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

Step 3. C(-1, 4) and r = 4 units

## THE STANDARD EQUATION OF A CIRCLE with CENTER AT THE ORIGIN

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

$$(x - 0)^2 + (y - 0)^2 = r^2$$

$$x^2 + y^2 = r^2$$