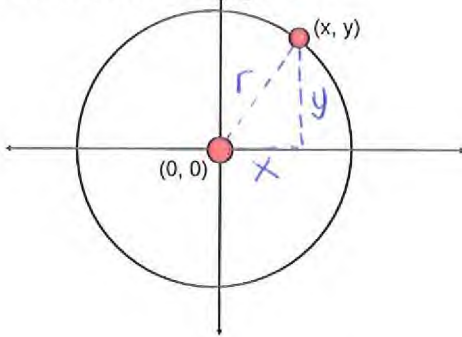


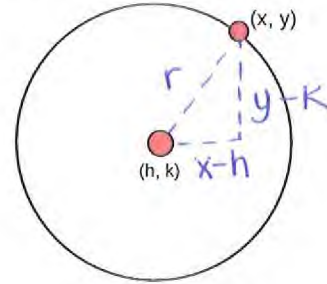
The Equation of a Circle

What is the equation of a circle with center at the origin?



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

What is the standard form of the equation of a circle?



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

Equation of a Circle:

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

*Center is written as (h,k)

*The equation includes the radius squared

Ex 1: Write the standard form of the equation of the circle with the given radius and whose center is the origin.

1. Radius = 5

$$x^2 + y^2 = 25$$

2. Radius = 9

$$x^2 + y^2 = 81$$

3. Radius = $\sqrt{7}$

$$x^2 + y^2 = (\sqrt{7})^2$$

$$x^2 + y^2 = 7$$

Ex 2: Write the standard form of the equation of the circle with the given radius and center.

4. Center: (3,-2)
Radius: 4

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

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

5. Center: (0,5)
Radius: 10

$$(x-0)^2 + (y-5)^2 = 10^2$$

$$x^2 + (y-5)^2 = 100$$

6. Center: (-5, 1)
Radius: 2

$$(x-(-5))^2 + (y-1)^2 = 2^2$$

$$(x+5)^2 + (y-1)^2 = 4$$

Try it by yourself!

Write an equation of the circle:

7. Circle with center at (-6, -3) and radius of 7

$$(x-(-6))^2 + (y-(-3))^2 = 7^2$$

$$(x+6)^2 + (y+3)^2 = 49$$

8. Circle with center at (0,2) and radius of $\sqrt{5}$

$$(x-0)^2 + (y-2)^2 = (\sqrt{5})^2$$

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

9. Circle with center at origin and radius of 9

$$(x-0)^2 + (y-0)^2 = 9^2$$

$$x^2 + y^2 = 81$$

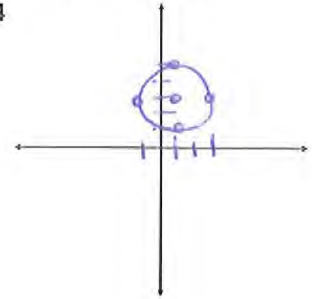
The Equation of a Circle

Ex 3: State the center and the radius from the given equation.

- $(x + 4)^2 + (y + 4)^2 = 9$
 $C: (-4, -4), r = 3$
- $(x - 2)^2 + y^2 = 24 = r^2$
 $C: (2, 0), r = \sqrt{24}$ or $2\sqrt{6}$
- $x^2 + y^2 = 5 = r^2$
 $C: (0, 0), r = \sqrt{5}$

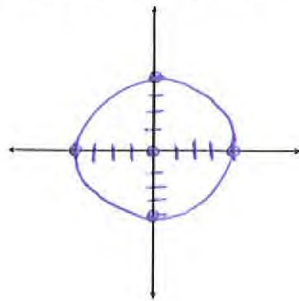
Ex 4: Graph the circle. State the center and radius.

- $(x - 1)^2 + (y - 3)^2 = 4$
 $C: (1, 3)$
 $r = 2$



Ex 5: Graph the circle. State the center and radius.

- $x^2 + y^2 = 16$
 $C: (0, 0)$
 $r = 4$



Ex 6: Graph the circle. State the center and radius.

- $(x + 2)^2 + (y - 3)^2 = 10$
 $C: (-2, 3)$
 $r = \sqrt{10}$
 $= 3.2$

