

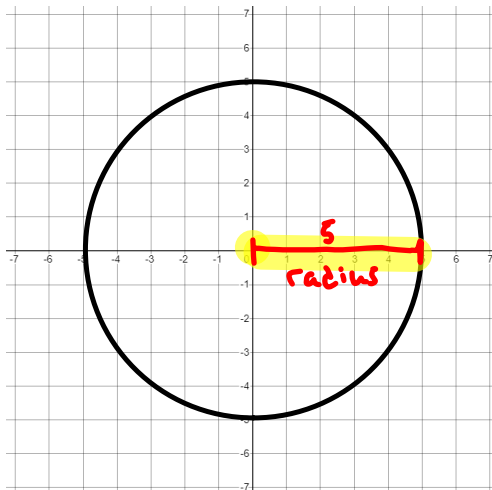
Geometry: 10.7 The Equation of a Circle

The equation of a circle is a SUM of x being squared and y being squared equalling some number.

Here's an equation of a circle with a center at (0, 0) and a **radius** of 5. x y.

$$x^2 + y^2 = 25 \quad *$$

What do you think the connection is between the equation and the information about the circle? (The center and radius)



10.7 Equations of Circles

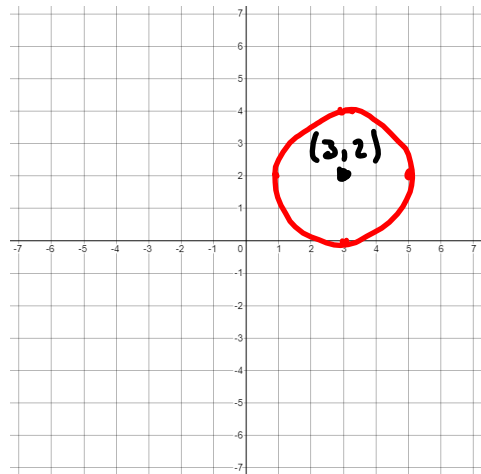
What if you wanted to move the circle Away from the center of the graph (0,0)? What if you wanted to change the radius of the circle? Let's see how that changes the equation.

Template : $(x \text{ (yellow)})^2 + (y \text{ (green)})^2 = \text{(blue)}$

Lets try to make a circle with this info... ↓

Center : $(3, 2)$

radius : 2



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

↑ opposite of 3 (so -3) ↑ opposite of 2 (so -2) ↑ radius squared.

10.7 Equations of Circles

Standard Form for a circle: $(x - h)^2 + (y - k)^2 = r^2$

Use the standard form equation of a circle to graph the circle.

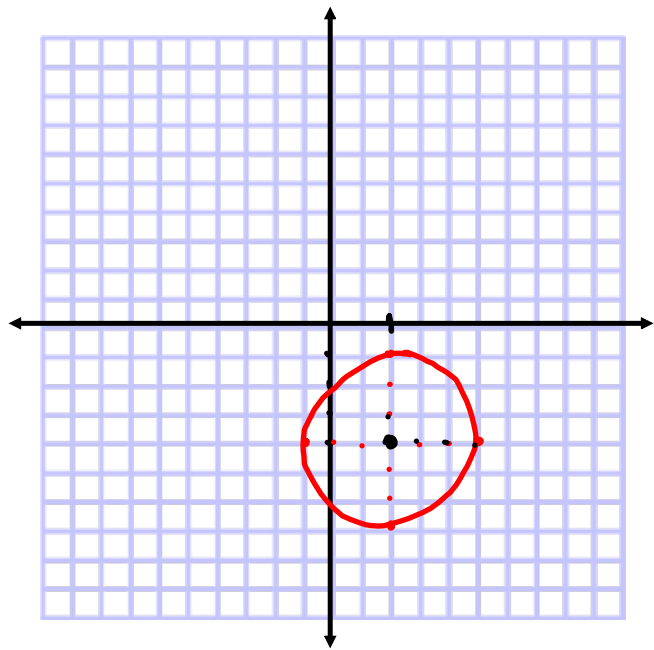
opposites of

$$(x - 2)^2 + (y + 4)^2 = 9$$

Center: $(2, -4)$

Radius: 3

square root 9 $\sqrt{9} = 3$



10.7 Equations of Circles

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

Ex: Write the standard form equation for the circle with center $(-3, 4)$ and radius of 5.

$$\therefore (x+3)^2 + (y-4)^2 = 25$$

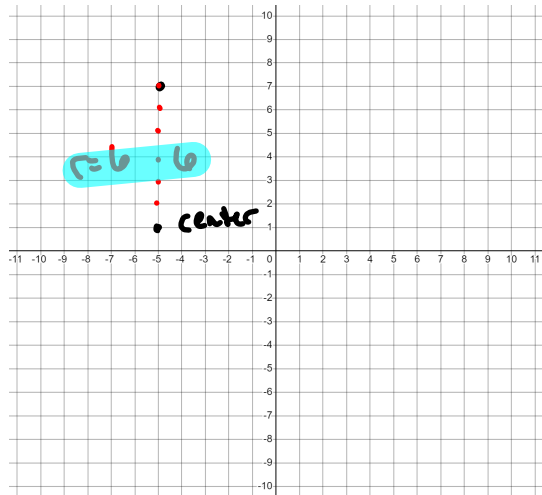
Ex: Write the standard form equation for the circle with a center at $(7, -9)$ and a radius of 9.

$$(x-7)^2 + (y+9)^2 = 81 \quad \left. \begin{array}{l} r^2 \\ 9^2 = 81 \end{array} \right\}$$

10.7 Equations of Circles

Ex: The center of a circle is $(-5, 1)$ and a point on the edge of the circle is $(-5, 7)$. What is the equation of the circle?

$$(x+5)^2 + (y-1)^2 = 36 \quad r^2$$



10.7 Equations of Circles

Homework:

Pg 523

3-15

#11.

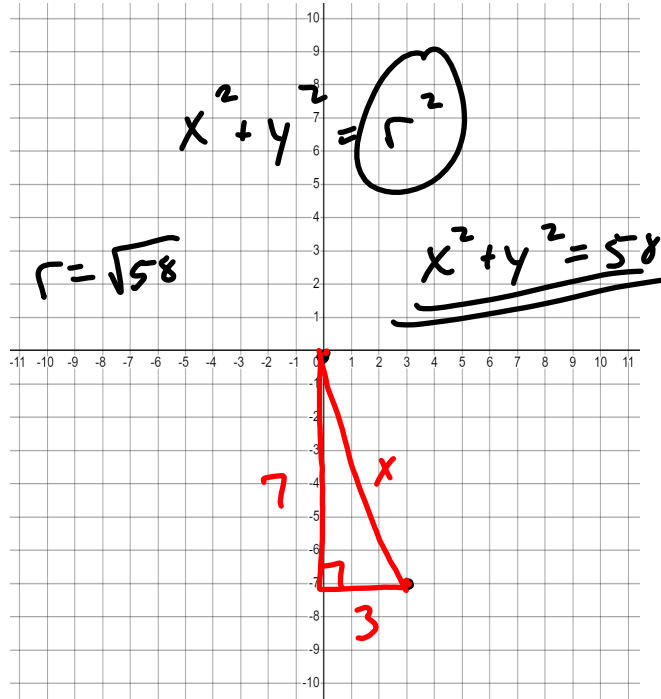
$$7^2 + 3^2 = x^2$$

$$49 + 9 = x^2$$

$$58 = x^2$$

$$\sqrt{58} = x$$

$$\sqrt{58}$$



Attachments

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