

Warm up:

Use completing the square to solve these problems.

1. $x^2 + 14x + 6 = 0$

2. $x^2 - 18x + 32 = 0$

Objective: SWBAT write the equation of a circle in standard form and expanded form.

Agenda:

Warm up

Notes

Practice

Problem Task

HW?

closure

The Equation of a circle in General form is:

$$x^2 + y^2 + ax + by + c = 0$$

The Equation of a circle in standard form is:

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

So if we know the center and radius of a circle, we can easily write the equation.

Center is at (4, 3) and the radius is 5

$h=4$, $k=3$ and $r = 5$ just plug it in

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

$$(x - 4)^2 + (y - 3)^2 = 5^2$$

or

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

Practice a couple

1. center $(2, 5)$ $r = 8$
2. center $(-1, 7)$ $r = 1$
3. center $(-4, -2)$ $r = 9$

Matching Game

Work with your partner, you have 15 minutes to complete this

Now let's take the equation in standard form and put it in general form:

$$(x - 2)^2 + (y - 5)^2 = 64$$

What ideas do you have?

Now do these!!

1 $(x+1)^2 + (x - 7)^2 = 1$

2. $(x + 4)^2 + (x + 2)^2 = 81$

To go from General Form to Standard form is a little more difficult....

We will need to complete the square TWICE for each problem

$$x^2 + y^2 + 4x + 8y + 16 = 0$$

Steps:

1. Move x, y together and the constant over
2. Complete the square for x and then for y.
3. simplify

$$x^2 + y^2 - 12x + 6y - 18 = 0$$

Practice: worksheet due tomorrow

Closure

What are the 2 most important steps in finding the equation in standard form from general form?

