

**Goals**:

* I can write equations of circles.
* I can graph circles.

**Vocabulary and Formulas**

**Circle**: the set of all points in a plane that are equidistant from a

given point in the plane

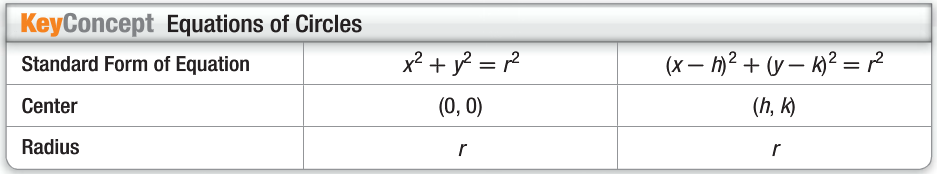
**Center (h, k):** the point that is equidistant from all points around a circle

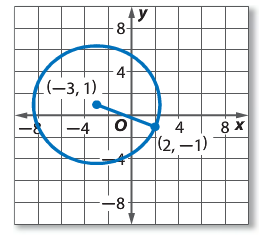
**Radius:** any segment with endpoints at the center and a point on the

circle is a radius of the circle.

**Midpoint:**

**Distance:**



**Example 1: Write an Equation from a Graph**

|  |  |
| --- | --- |
| Steps | Explanation |
|  | Standard form of the circle. |
|  | Plug in what you know. |
|  | Simplify inside the parentheses |
|  | Use distance formula to find the radius |
|  | Simplify for |
|  | Write the final equation of the circle! |

**Example 2: Write an equation for a circle if the endpoints of a diameter are at and .**

|  |  |
| --- | --- |
| Step 1: Find the center. | Midpoint Formula using the two points given. |
| Step 2: Find the radius. | Distance formula using one of the points given and the center.  Since  then . |
| Step 3: Put it all together! | Substitute *h, k,* and into the standard form of the equation of a circle. |

**Example 3: Write an equation for each circle given the center and radius.**

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| Center: ,  Original Equation:  Substitute in what you have: |

**Example 4: Graph an Equation in Standard Form**

**Find the center and radius of the circle with equation . Then graph the circle.**

|  |
| --- |
| Questions to ask yourself? |
| What is the center of the circle? |
| What is the radius? |
| What are some other points on the circle?   |  |  | | --- | --- | | x | y | | 0 |  | | 6 |  | | 8 |  | | 10 |  | |