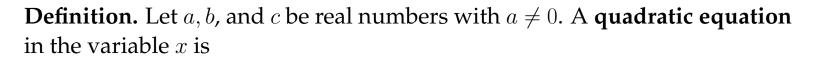
Day 5 Notes
Tuesday February 4th
Review 1.4 Factoring
Quadratics and 2.2 Circles

### 1. Review Quadratics

In this section we will review how to factor quadratics.



To solve a quadratic means

**Examples:** 

Solving using the zero property and factoring

**Example 1.** Solve the following quadratic equations.

- 1.  $x^2 8x = 0$
- **2.** 2x(2x-7)=0
- $3. \ x^2 5x + 6 = 0$
- 4.  $x^2 + 4x 5 = 0$
- 5.  $x^2 + 10x + 24 = 0$

## Solving quadratics using the Square Root Property

When we can bring the equation in the form  $x^2 = k$ , we can solve by square rooting both sides.

**Example 2.** Solve using the square root property.

- 1.  $x^2 = 64$
- **2.**  $2y^2 + 36 = 0$
- 3.  $(w+3)^2 = 8$

# Solving quadratics by completing the square

We can manipulate the quadratic equation  $ax^2 + bx + c = 0$  with  $a \neq 0$  to write as the square of a binomial equal to a constant.

**Example 3.** Solve by completing the square.

- 1.  $x^2 3 = -10x$
- 2.  $x^2 8x 2 = 0$
- 3.  $-2x^2 3x 5 = 0$

# Solving quadratics by using the quadratic formula

**Example 4.** Use quadratic formula to solve  $x^2 - 6x = 3$ 

#### 2. Circles

Next, we will start graphing specific categories of equations such as circles, ellipses, hyperbolas and parabola. We begin with circles.

**Definition.** A circle is the set of all points in a plane that are equidistant from a fixed point called \_\_\_\_\_\_. The fixed distance from any point on the circle to the center is called the \_\_\_\_\_\_.

## Standard form of an equation of a circle

Given a circle centered at (h, k) with radius r, the standard form is

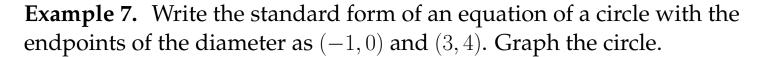
### Example 5.

1. 
$$(x-4)^2 + (y+3)^2 = 25$$

2. 
$$x^2 + (y - 1/2)^2 = 12$$

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

**Example 6.** Write the standard form of an equation of a circle with center (-4,6) and radius 2. Graph the circle.



## General form of an Equation of a circle

An equation of a circle written in the form  $x^2 + y^2 + Ax + By + C = 0$  is called the general form of an equation of a circle.

**Example 8.** Write the equation of the circle in standard form.

$$x^2 + y^2 + 10x - 6y + 25 = 0$$