Algebra II Notes 9/13-14/18

Factoring Quadratics

Warm-up:

Find the greatest common factor of the three terms in the **quadratic** expression: 2x2 + 6x + 4

Now write the quadratic expression in factored form:

Homework review… did you have any questions about the introduction to factoring?

Quadratic functions sometimes factor into two **binomials**. You can see how this might happen. Find the product of the two binomials below:

1. (x + 1)(x + 2)

Now let’s update the factored form of 2x2 + 6x + 4:

It turns out there’s a technique to factoring quadratics. You should always find the GCF first!

Next: if you have a quadratic in the form ax2 + bx + c, where a, b, and c are integers, AND a = 1

1. How do the factors combine to make c?
2. How do the factors combine to make b?

Let’s look at our example: x2 + 3x + 2 = (x + 1)(x + 2)

So… you need to find two factors of **c** that sum to **b.** Let’s try it – factor:

1. x2 – 8x + 7
2. n2 – 14n + 48

Sometimes you’ll see a problem like this one – factor:

1. 3x2 + 12x – 63

 Exit Ticket: List the STEPS for factoring quadratics.

Homework if not finished in class:



Algebra II Notes 9/14 or 17/18

Solving Quadratic Equations Using Factoring

Warm-up: Factor the function f(x) completely: f(x) = 2x2 + 12x - 54

Homework review: Check the answers (below). Are there any we should talk about as a class?



Frequently we will want to **solve** quadratic equations using what we know about quadratic expressions.

1. What values of x would make the function from the warm-up, f(x) = 0 ? Guess a number!

If a quadratic function factors, you can use the factors to find the zeroes of the function (that is, when f(x) = 0).

1. What do you get when you multiply 0 by any other number?
2. What happens to f(x) if one of its **factors** is zero when you plug in a value of x?

Let’s look at our example: 2x2 + 12x – 54 = 2(x + 9)(x – 3). What values of x make 2x2 + 12x – 54 = 0?

So… you need to set each factor equal to zero to solve this. Let’s try it:

1. f(x) = x2 – 8x + 7; Find the values of x such that f(x) = 0
2. f(n) = n2 – 14n + 48; Find the values of n such that f(n) = 0

Sometimes you’ll see an equation like the one below. How could you solve this for x?

1. 3x2 + 12x = 63

 Closure: write down the STEPS for solving quadratics by factoring.

Homework:

