**5.3 Solving Polynomial Equations**

Objectives: To Solve Polynomials by Factoring.

To Solve Polynomials by Graphing.

We briefly talked about how to solve by factoring in 5.2 when we looked at example 1.

**Therefore, .**

**Steps to Solving Polynomial Equations by Factoring**;

1. Write original equation
2. Rewrite in standard form
3. Factor completely (with the goal of getting down to at least a quadratic so you can use the formula if it doesn’t factor further)
4. Use Zero Product Property
5. Check Solutions in Original Equation

Example 1: Solve the following Polynomial.

So our 4 answers are,

Polynomial Factoring Techniques “Short Cuts” on page 297. They are helpful if you have them memorized, but you don’t need to have them memorized if you are sound in your other factoring methods.

If I were going to focus on any of them from the chart it would be the “sum or difference of cubes” method:

Example:

Example 2: Solve the following Polynomial (using a substitution method).

Let

Now we can factor using our “old method” when a=1.

We’ll now use Zero Product Property to Solve.

The 4 roots/solutions/zeros are:

Example 3: Finding Real Roots by Graphing.

Method 1: Graph the two equations individually and see where they cross (using the “F5” button and then “intsect”)

x=-1.270534021

x=-0.3413246893

x=4.61185871

Method 2: Rewrite in Standard from and find the zeros (using the “F5” button and then “roots” to find x-intercepts)

x=-1.270534021

x=-0.3413246893

x=4.61185871

We should notice that the x values are the same in either method.

HMWK: page 300 #1-9, 17, 25-31 (odd), 37, 51-52