Unit 3 ~ Day E ~ Solving Inequalities by Factoring

Solving Inequalities By Factoring – Set the quadratic inequality, ax2 + bx + c <, >, <, or > 0

Then factor using the method of your choice. Since it is easier to use a graphing method to solve these inequalities, graph and then determine the solution set.

Examples: 1.) x2 - x – 6 < 0

(x – 3)(x + 2) < 0 (one factor must be positive & one factor must be

negative for this to be true)

(Use the number line to see what happens around x= **3** & x= **-2**)

**x-3** ------------------------------- --------------------- +++++++++++++

**x+2** ------------------------------- ++++++++++++ ++++++++++++++

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-6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6

So the solution set will be the region where one factor is positive & one is negative.

Solution Set = {x **-2 < x < 3** }

1. x3 - 4x2 - 4x + 16 > 0

(x3 - 4x2)+(- 4x + 16) > 0 Factor by Grouping

x2 (x – 4) – 4(x – 4) > 0

(x – 4)(x2 – 4) > 0

(x – 4)(x – 2)(x + 2)>0 For this to be true all factors must be positive or

one factor is positive & two factors are negative

Use the number line to see what happens around x= **4**, x= **2**, x= **-2**

**x - 4**------------------------------- ------- ++++++

**x - 2**------------- ---------------- ++++ ++++++

**x + 2**--------------++++++++++ ++++ ++++++

-6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6

So the solution set will be the regions where the product of three factors is positive.

Solution Set = {x **- 2 < x < 2 or x > 4** }

Example 1: 

Example 2: 

Example 3: 

Unit 3 Day E Homework Page:

Solve the following polynomial inequalities using Factoring. Graph & identify the solution set.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 
13. 
14. 