4.2 Inequalities in One Variable Notes

Solving inequalities requires a little more thought than equations. We can solve them by making a sign chart, or graphing.

***Solutions to inequalities are written in intervals.

≤ or ≥: Use Brackets < or >: Use Parenthesis

To solve by using a sign chart:

Step 1: Be sure zero is on one side of the inequality all by itself

Step 2: Find the zeros of the function or values where the function is undefined

Step 3: Fill in a sign chart with values both less than and greater than the zeros and undefined values by plugging in numbers

Step 4: Find appropriate intervals (positive or negative)

Step 5: Be sure to write the answer using interval notation

To solve by graphing:

Step 1: Be sure zero is on one side of the inequality all by itself

Step 2: Graph the function and look for positive/negative intervals

Step 3: Be sure to write the answer using interval notation

Example 1: Solve the inequality $x^2 - 3x \geq 40$

Example 2: Solve the inequality $x^3 - x^2 - 6x < 0$

Example 3: Solve the inequality $(x-2)\sqrt{x+3} \geq 0$

Example 4: Solve the inequality $\frac{x-5}{|x+1|} \leq 0$

Example 5: The length of a rectangle is five more than the twice the width. If the area is at least 75 square centimeters, what are the possible values for the width?

Example 6: A packaging company is designing a new open-topped box with a volume of at least 512 in3. The box is to be made from a piece of cardboard measuring 24 inches by 24 inches by cutting identical squares from the corners and turning up the sides. Describe the possible lengths of the sides of the removed squares.