4.04 Inequalities in Two Variables

Basic Algebra: One Step at a Time, **Pages 325-332:   #8**, 10

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In each problem involving inequalities, there are three steps.

First, you must get the line in place, by graphing the corresponding equation.

Second, you must decide whether the line should be included or not-- that is, should it be a dotted or solid line.

Third, you must decide whether to shade above or below the line.

> **Step 1: Graph the Line!**
>
> **(Use methods of previous sections!)**
>
> **Step 2: Dotted ($<$ or $>$)   or   Solid ($\le$ or $\ge$)!**
>
> **Step 3: Shade ABOVE or BELOW!**
>
> $+ Y > \ge$ **Shade ABOVE the Line!**
> $+ Y < \le$ **Shade BELOW the Line!**

**NOTE: You MUST have a positive Y coefficient!!
          If you have a negative Y coefficient, this REVERSES the RULE!!**

Unfortunately, in the format of this website, I have not learned how to make a dotted line. I will have to ask YOU to make the lines dotted that have either a "<" or ">" symbol.

p. 328 # 8. $3x + 2y > -12$

Solution:

Step 1: **Graph the line:** $3x + 2y = -12$

Since this is in standard form, find the x and y intercepts.

If x = 0, then 2y = -12
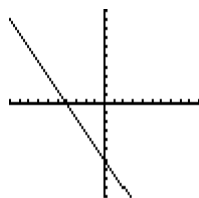
y = -6

If y = 0, then 3x = -12

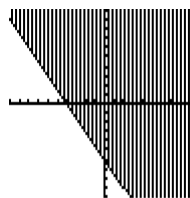x = -4

Step 2: Graph this line with a dotted line (you will have to do this for me, since I don't know how to graph a dotted line in this format.

$3x + 2y = -12$ $3x + 2y > -12$

(Dotted Line!)

Step 3: Shade above the line. Don't forget to make this line dotted!!

p. 425 #10. $-2x + y \leq 8$

Solution:
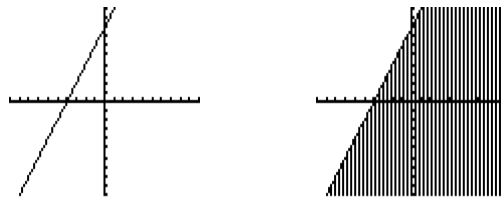
Step 1: Graph the line: $-2x + y = 8$

Since this is in standard form, find the x and y intercepts.

If x = 0, then   y = 8

If y = 0, then -2x = 8
                                x = -4

Step 2: Graph this line with a solid line.

$-2x + y = 8$ $-2x + y \leq 8$

(Solid Line!)

Step 3:   Shade below the line. Don't forget to make this line solid!!