

**WEEK 7 NOTES, EXAMPLES AND EXERCISES**  
**STRAND 3: FUNCTIONS**  
**SIMPLE LINEAR EQUATIONS AND INEQUATIONS**

**WEEK 9**

**SUB TOPIC: GRAPHING INEQUATIONS ON A CARTESIAN PLANE.**

**LESSON OBJECTIVES:** Students should be able to:

- Sketch inequations on a Cartesian plane.
- Express graphs as a set builder notation.

**LESSON NOTES/EXAMPLES:**

To sketch inequations on a Cartesian plane:

1) use the same method for sketching equations but:

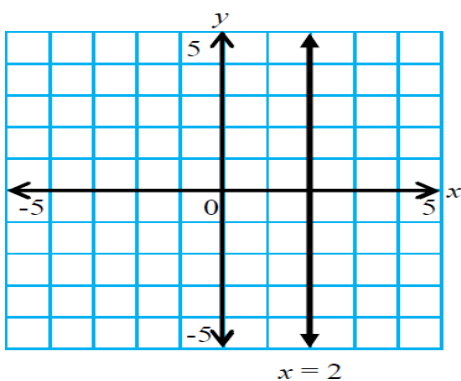
NOTE:

If  $>$  or  $<$  use dotted line  
If  $\geq$  or  $\leq$  use solid line  
If  $>$  or  $\geq$  shade on right hand side or above the graph  
If  $<$  or  $\leq$  shade on the left hand side or under the graph

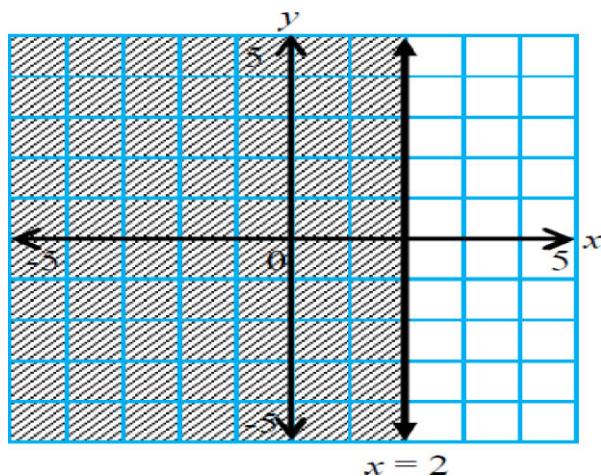
**Examples:** Sketch:

(a) Draw the graph of  $\{(x, y): x \leq 2\}$

**Step 1:** Draw a line  $x = 2$ , inequation has  $\leq$  so the line is solid as shown below

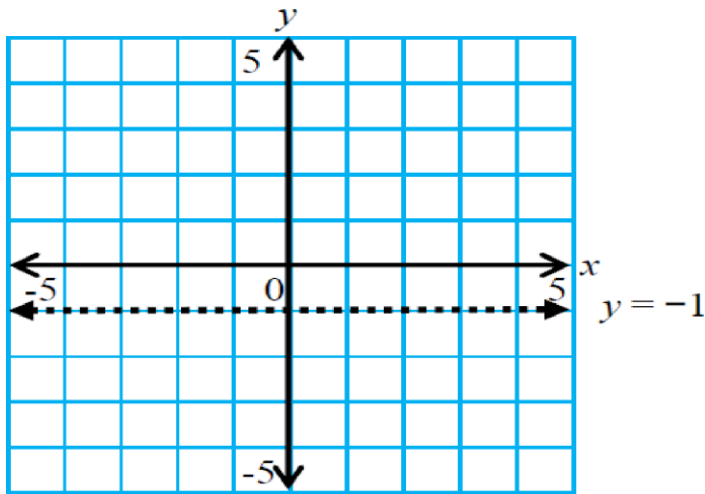


**Step 2:** Shading depends also on sign therefore since  $\leq$  we will shade on the left as shown below:

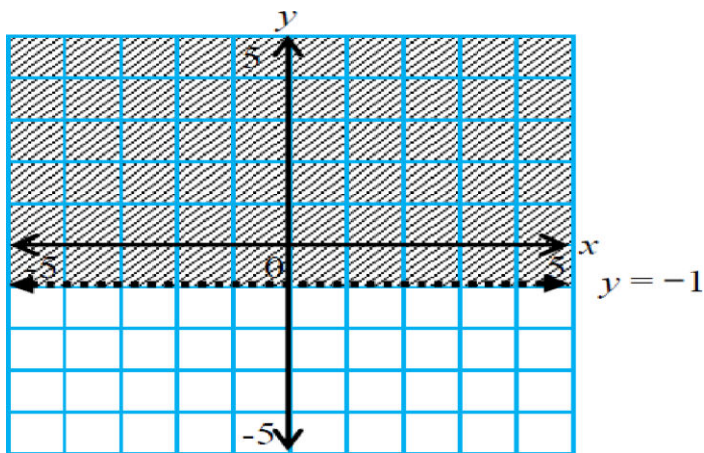


b) Draw the graph of  $\{(x, y): y > -1\}$

**Step 1:** Draw a line  $y = -1$ , inequation has  $>$  so the line is a dotted line as shown below



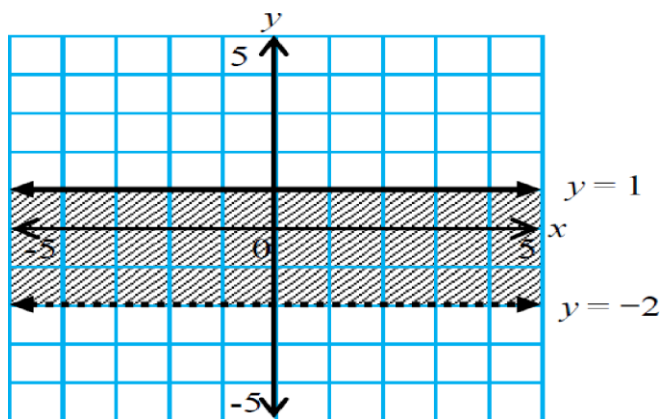
**Step 2:** Shading depends also on sign therefore since  $>$  we will shade above the graph as shown below:



c) Draw the graph of the function  $\{(x, y) : -2 < y \leq 1\}$

**Step 1:** Draw a line for  $y = 1$  and  $y = -2$ , inequation has  $<$  so on  $-2$  use a dotted line and inequation has  $\leq$  so on  $1$  use a solid line as shown below

**Step 2:** If there are two lines drawn shading will remain between the two lines as shown below.



### EXERCISE:

On a cartesian plane, draw the graph of the following regions.

- a)  $\{(x, y) : x > 1\}$       b)  $\{(x, y) : y \leq -2\}$       c)  $\{(x, y) : -1 < x \leq 4\}$



