

# Algebra III Graphing Linear Inequalities

## Section 1.8

The graph of a linear inequality results in the division of the coordinate system into two half planes. The first includes values of the solution set and the second does not.

To determine the half plane that holds the solution choose a point on one side of the line and determine whether or not it gives a true outcome. If it does then shade the half-plane that contains that point. If it does not, then shade the opposite half-plane.

If an inequality includes an equal sign, then the line is solid and if it does not include an equal sign, then the line is dotted.

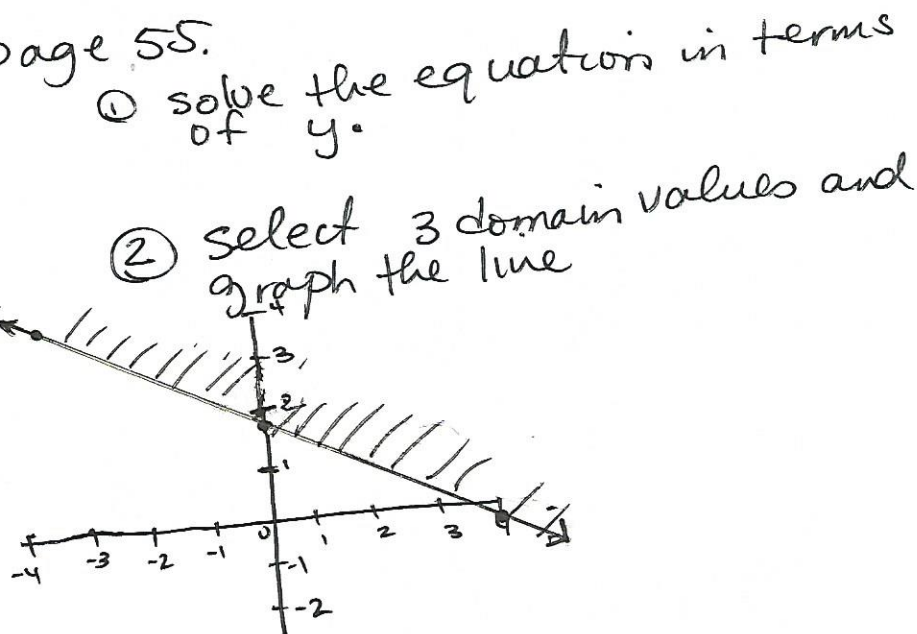
Example Problems on page 55.

11.  $2x + 4y \geq 7$

$$4y \geq -2x + 7$$

$$y \geq -\frac{2}{4}x + \frac{7}{4}$$

x	y
4	$-\frac{1}{4}$
0	$\frac{7}{4}$
-4	$\frac{15}{4}$



Test point (0,0)

$$\text{Is } 4(0) \geq -2(0) + 7?$$

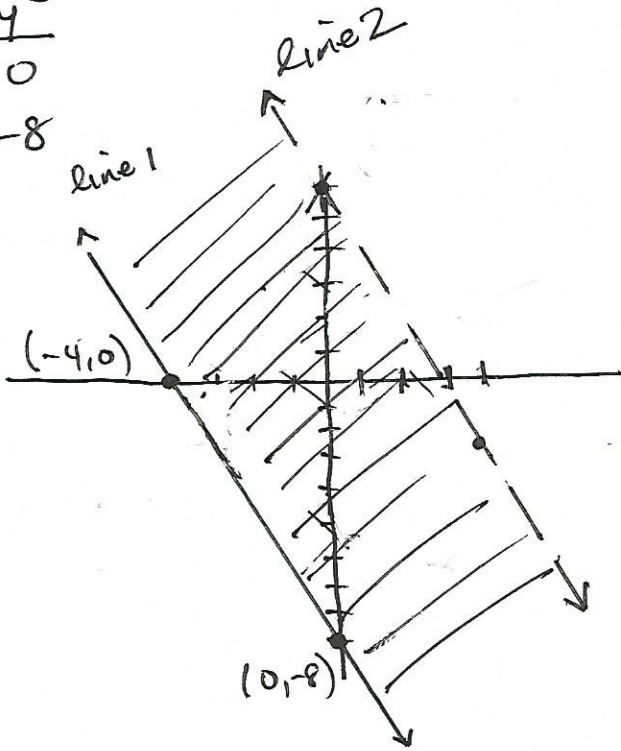
$0 \geq 7$  false shade away from (0,0)

#19  $-8 \leq 2x + y < 6$

$-8 \leq 2x + y$

$-2x - 8 \leq y$

x	y
-4	0
0	-8

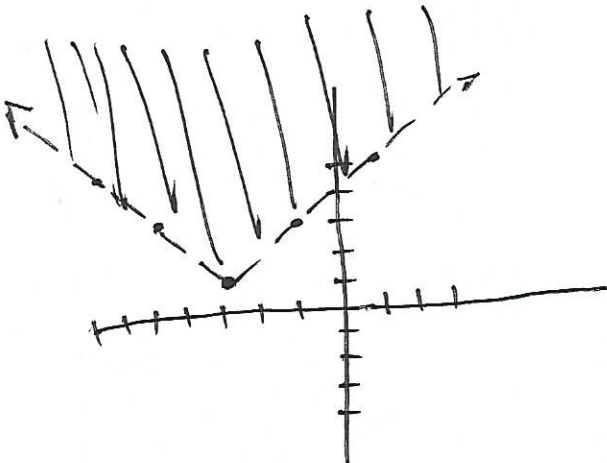


$2x + y < 6$

$y < -2x + 6$

x	y
0	6
4	-2

#20.  $y - 1 > |x + 3|$   
 $y > |x + 3| + 1$



① Find zero point for x  
 $x + 3 = 0$ ;  $x = -3$

x	y
-3	1
-5	3
-1	3
-7	5
1	5

② Find domain values equidistant from the zero point

③ Plot coordinate and connect with a dashed line.

④ Check a test point to fill in the graph

$0 > 4$  False