INTERMEDIATE ALGEBRA

GPS # 16   4.3 SYSTEMS OF LINEAR INEQUALITIES   NAME: *Parul Patel*
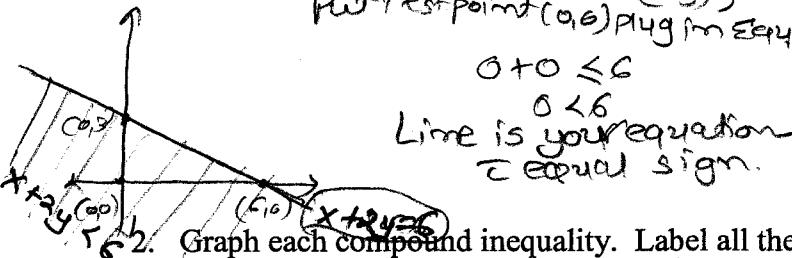
ny Curve
/no 26.

> **Useful Guidelines:**
> To graph a Linear Inequality:
> 1. Graph the line (make the line solid if the inequalities involves $\leq$ or $\geq$, or make the line dash if inequalities involves $<$ or $>$).
> 2. Pick a point not on the line as a test point and substitute the coordinates in the inequality.
> 3. Shade the side of the line that includes the test point if the test point satisfies the original inequality; otherwise, shade the region on the other side of the boundary line.
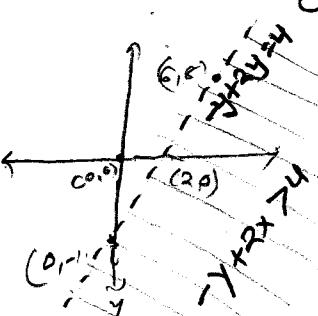
1. Graph each linear inequality in two variables. Label all the points.

a) $x + 2y \leq 6$

Let $x + 2y = 6$ $\Rightarrow$ $2y = -x + 6$
$y = -\frac{1}{2}x + 3$ (line going down passing $(0,3)$)
Put Test point $(0,6)$ plug in ≤ 4
$0 + 0 \leq 6$
$0 \leq 6$
Line is your equation = equal sign.

b) $-y + 2x > 4$ Let $-y + 2x = 4$
Be equation
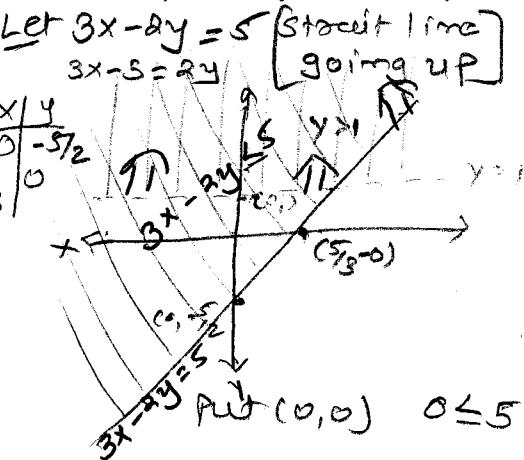$-y = 4 - 2x$ $y = 2x - 4$

x	y
0	-4
2	0
6	0

$0 + 0 > 4$ — Not true
So neat!

2. Graph each compound inequality. Label all the points.
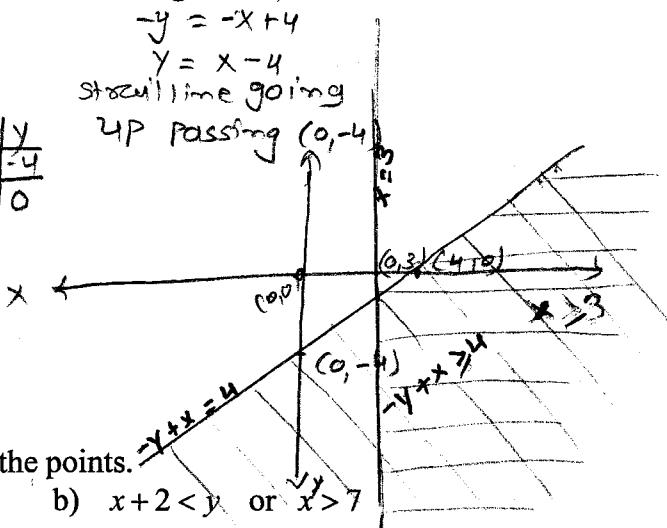
a) $3x - 2y \leq 5$ and $y > 1$ $\cap$ Let $y = 1$

Let $3x - 2y = 5$ (Straight line going up)
$3x - 5 = 2y$

x	y
0	-5/2
5/3	0

Put $(0,0)$ $0 \leq 5$

b) $-y + x \geq 4$ and $x \geq 3$ Let $-y + x = 4$ $\cap$ $x = 3$
$-y = -x + 4$
$y = x - 4$
Straight line going up passing $(0,-4)$

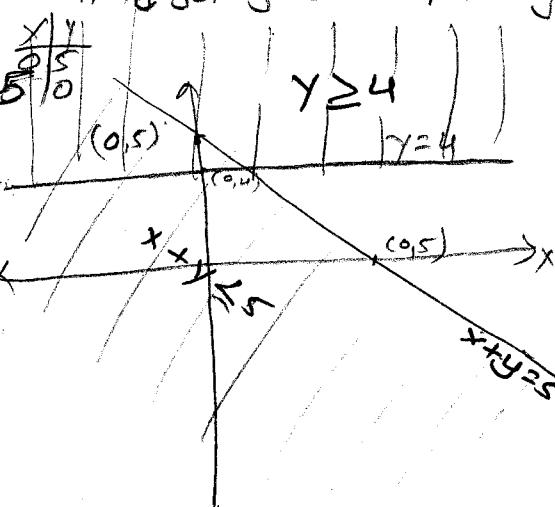| x	y
0	-4
4	0

Put $0 \geq 4$ Not true

3. Graph each compound inequality. Label all the points.

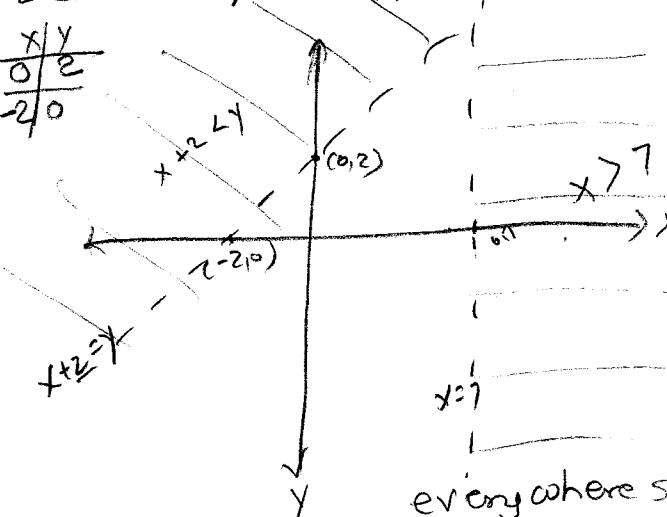a) $x + y \leq 5$ or $y \geq 4$ $\cup$ Let $y = 4$

Let $y = -x + 5$
line going down passing $(0,5)$

x	y
0	5
5	0

$y \geq 4$ $y = 4$
Everywhere shaded

b) $x + 2 < y$ or $x > 7$

Let $x + 2 = y$ $\cup$ $x = 7$

x	y
0	2
-2	0

$x > 7$
$x = 7$
everywhere shaded