

## Graphing Inequalities (review)

### Example

A hockey team has 18 players. Practice jerseys are \$50 and hockey sticks are \$85, You have no more than \$3000 to spend. Write the inequality.

Let  $j$  be the # of jerseys  
 $s$  be the # of sticks ] You must identify the variables

$$50j + 85s \leq 3000$$

$$\{ (j, s) \mid 50j + 85s \leq 3000, j \in \mathbb{W}, s \in \mathbb{W} \}$$

## Graphing Inequalities

① Graph the boundary line

Ⓐ  $y = mx + b$  ← use  $b$  and  $m$

Ⓑ  $Ax + By = C$  ← find  $x$  and  $y$  intercepts

② Dashed line ( $<$   $>$ )

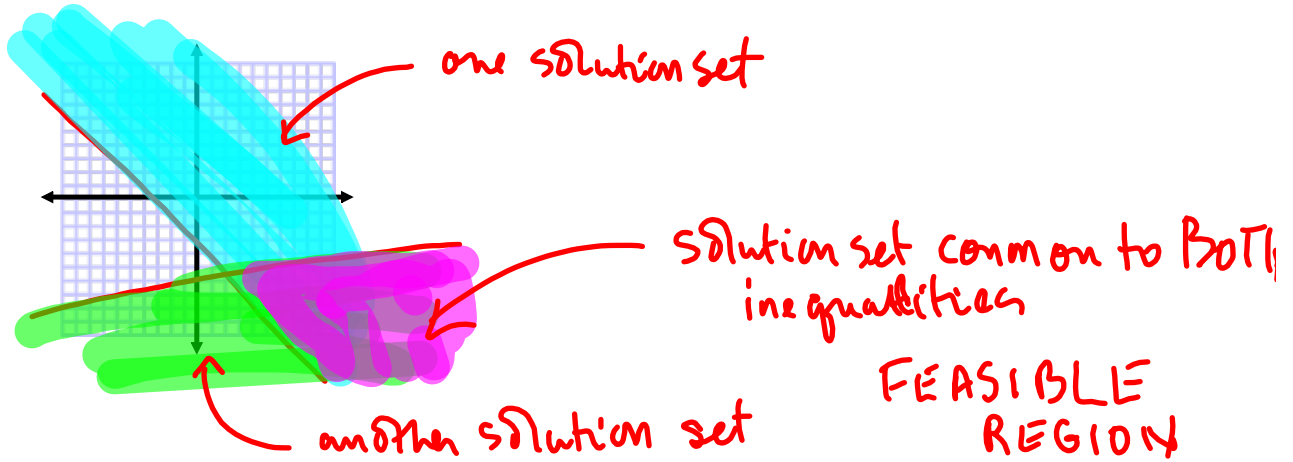
Solid line ( $\leq$   $\geq$ )

③ Use a test point to decide on the region to be shaded → often use  $(0, 0)$

④ Stipple (and shade) if the data is discrete

$<$   $>$  don't stipple on line (dashed) ( $\in \mathbb{I}, \in \mathbb{W}$ )  
 $\leq$   $\geq$  stipple on the line (no line)

# §6-2 Systems of Inequalities



Example - Graph the following system of linear inequalities

$$y \geq -2x$$

$$-3 < x - y$$

x-int

$$-3 = x - y$$

$$-3 = x - 0$$

$$x = -3$$

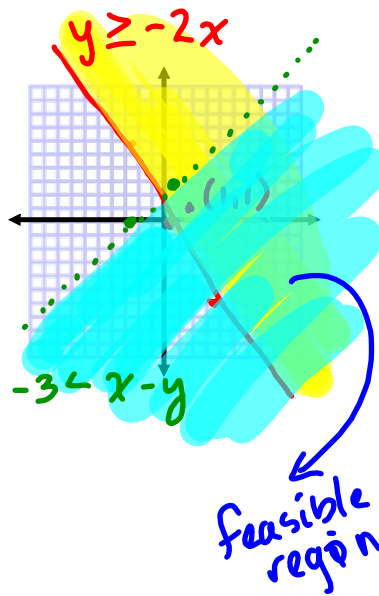
y-int

$$-3 = x - y$$

$$-3 = 0 - y$$

$$-3 = -y$$

$$y = 3$$



use (1,1) as a test pt:

LS	RS
1	$\checkmark$ $-2(1)$
1	$\geq$ $-2$

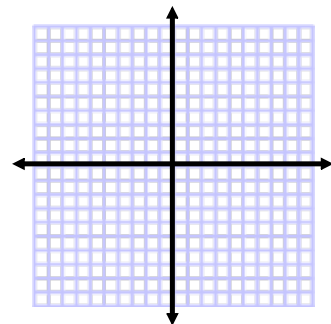
use (0,0) as test

LS	RS
-3	$0 - 0$
-3	$<$ $0$

Example: Graph the following system of linear inequalities

$$\{(x,y) \mid -x + 2y \geq -4, x \in \mathbb{R}, y \in \mathbb{R}\}$$

$$\{(x,y) \mid y \geq x, x \in \mathbb{R}, y \in \mathbb{R}\}$$



Example

(A)  $-2x - 6y \leq 12$

(B)  $-x + 2y > -4$

Find the x and y-intercepts for the boundary line (A)

x-int (let  $y=0$ )

$$-2x - 6(0) = 12$$

$$-2x = 12$$

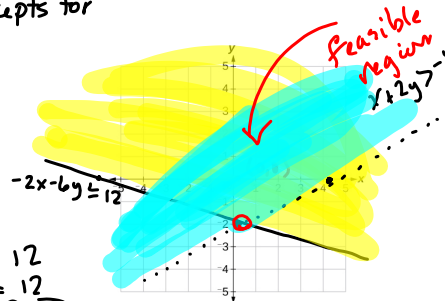
$$x = -6$$

y-int

$$-2(0) - 6y = 12$$

$$-6y = 12$$

$$y = -2$$



Test (0,0)

LS	RS
$-2x - 6y$	$12$
$0$	$\leq$

Now find the boundary line for (B)

$$-x + 2y = -4$$

x-int

$$-x + 2(0) = -4$$

$$-x = -4$$

$$x = 4$$

y-int

$$-0 + 2y = -4$$

$$2y = -4$$

$$y = -2$$

Test (0,0)

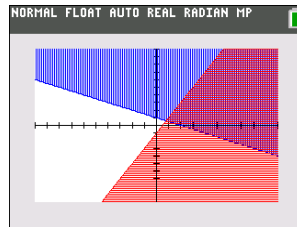
LS	RS
$-x + 2y$	$-4$
$-0 + 2(0)$	$>$

$(0,0)$  is in the solution set.

An example using the graphing calculator:

$$y > -\frac{1}{2}x + 1$$

$$y \leq 2x - 1$$



TO DO

- ① Practice Sheets
- ② Read Summary (p307)
- ③ Do "Further Your Understanding" (p307 | 1+2)