5.1 Linear Inequalities in 2 variable.

Monday, October 9, 2017 1:12 PM

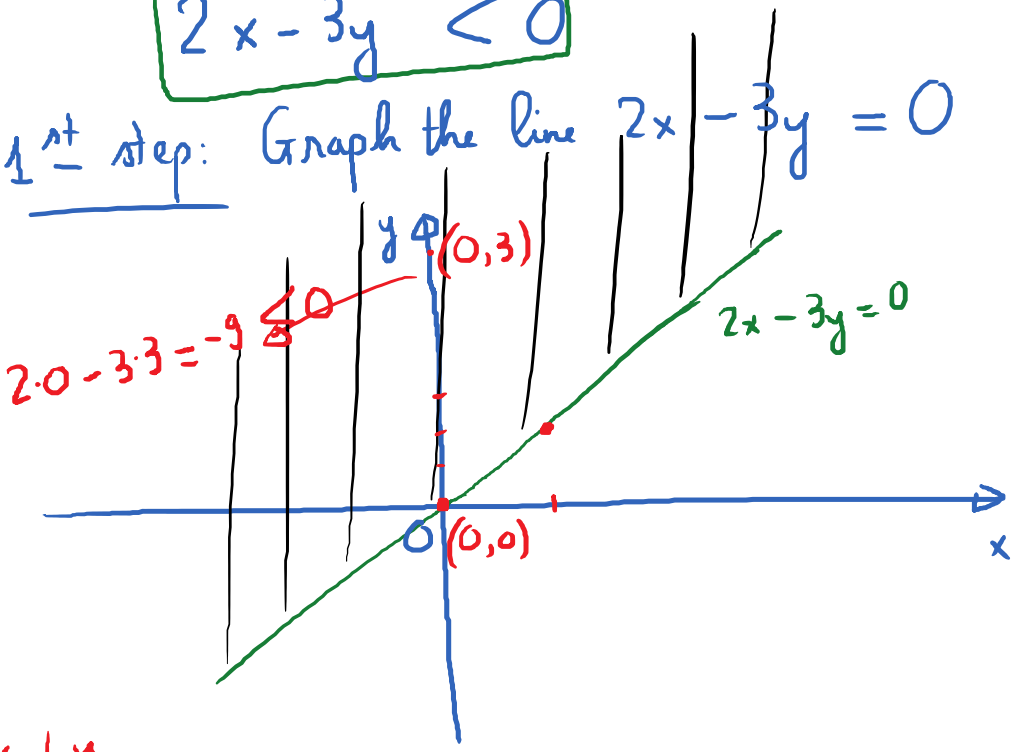
Goals: (1) Graph and solve linear inequalities in 2 variables.

(2) Some applications.

E.g. $2x < 3y$

$$2x - 3y < 0$$

1st step: Graph the line $2x - 3y = 0$



x	y	
0	0	→ (0,0)
1	$\frac{2}{3}$	→ $(1, \frac{2}{3})$

$2 \cdot 1 - 3y = 0$

$-3y = -2;\ y = \frac{2}{3}$

E.g. Solve the inequality

$$3x - 5y > 15.$$

Find and shade the correct region.

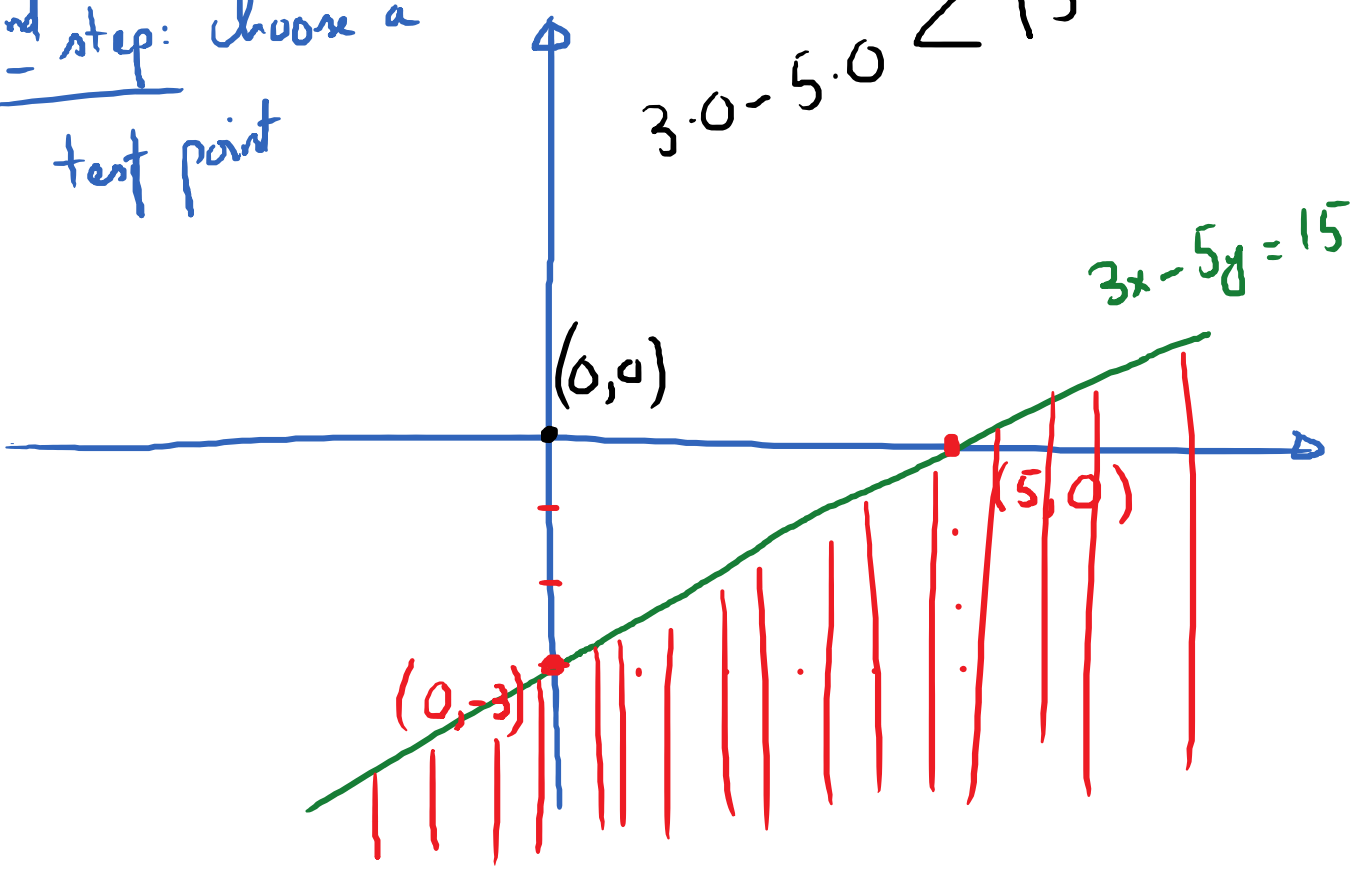
1st step: Graph the line $3x - 5y = 15$

$$-5y = -3x + 15$$

$$y = \frac{3}{5}x - 3$$

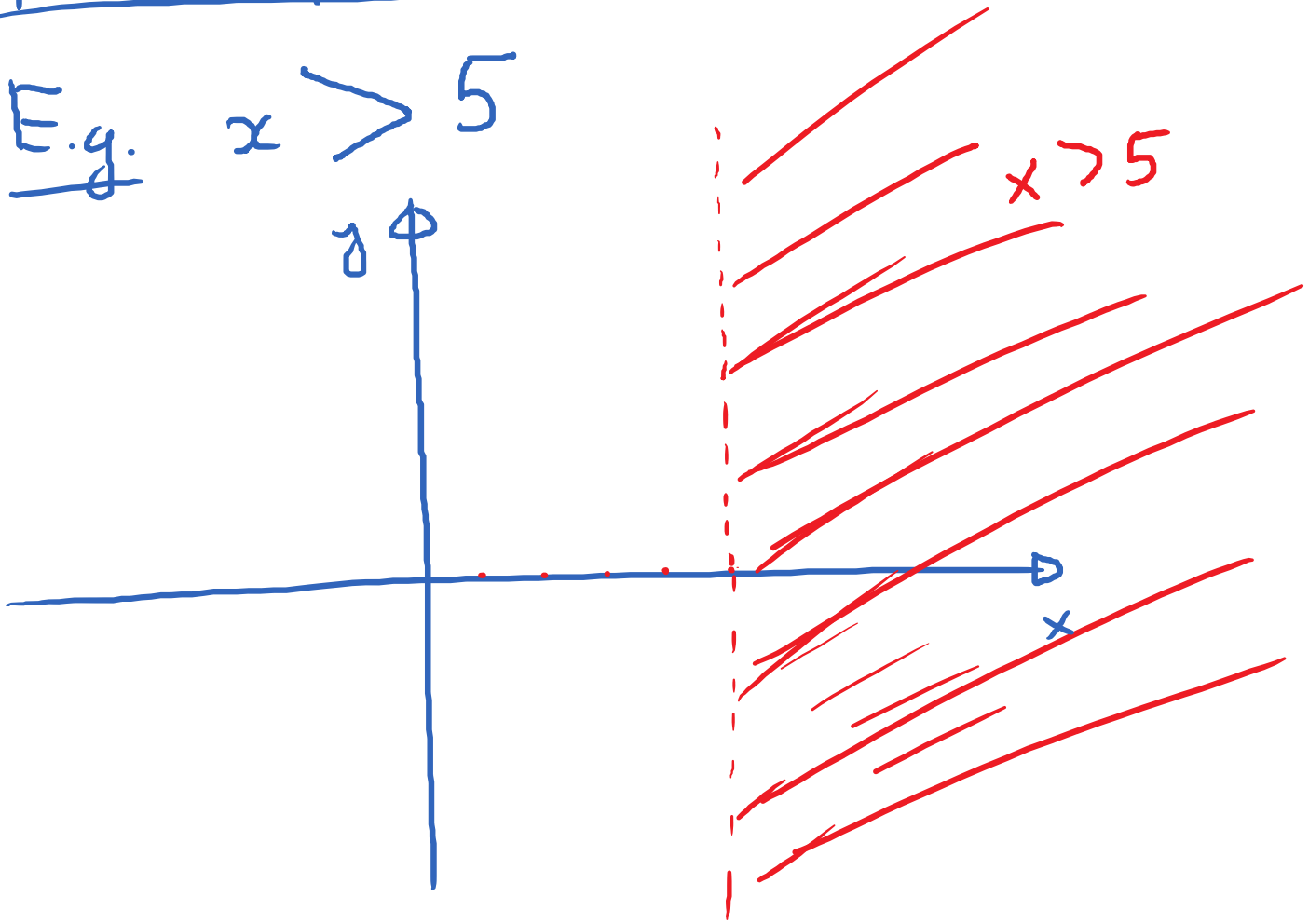
2nd step: choose a test point

$3 \cdot 0 - 5 \cdot 0 < 15$

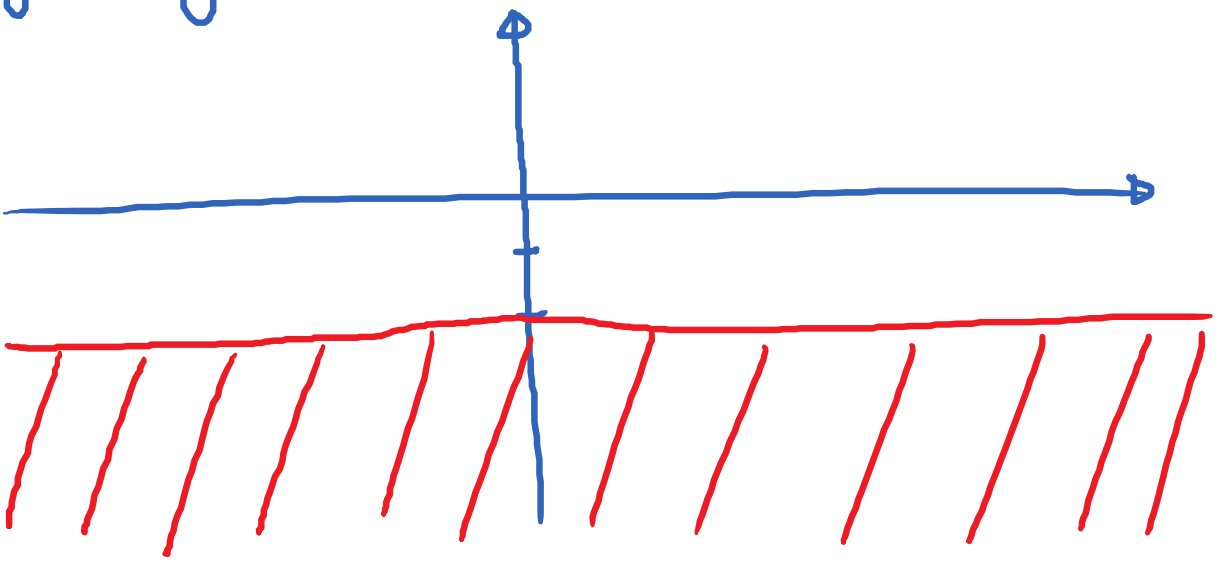


Special Inequalities:

E.g. $x > 5$



E.g. $y \leq -2$



HW #7

$$8x + 10y \geq 40$$

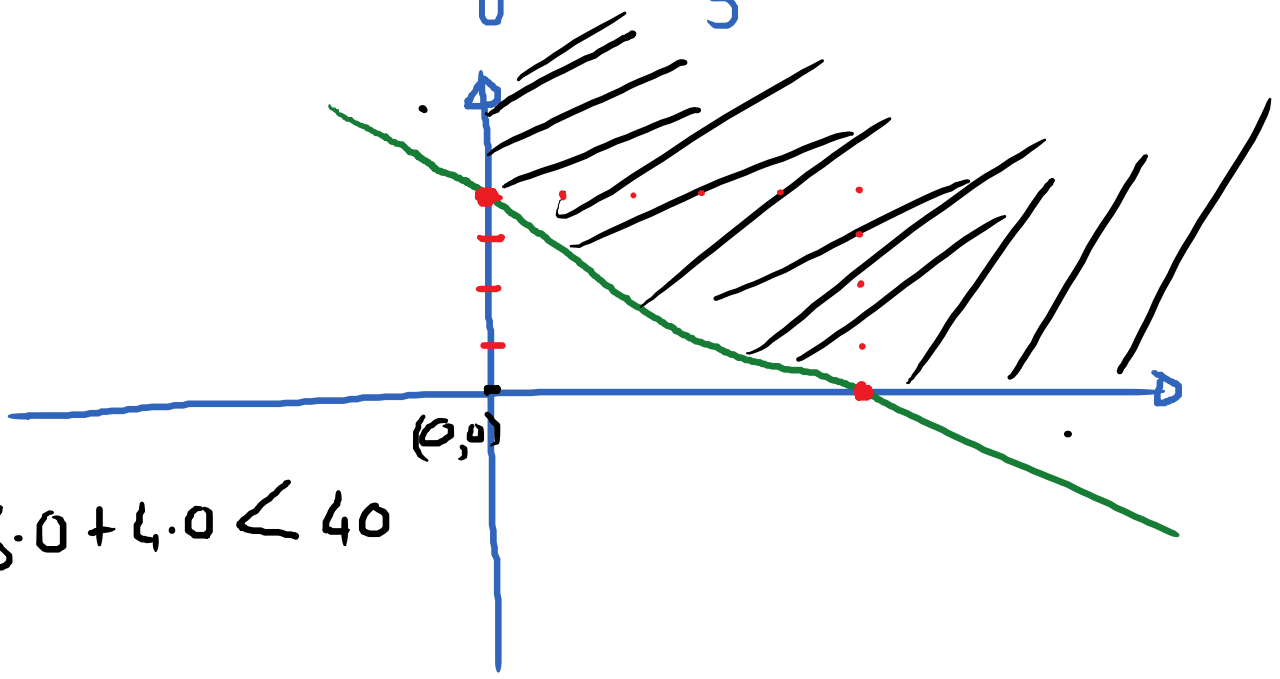
$$x \geq 0 \; ; y \geq 0$$

1st step: $8x + 10y = 40$

$$10y = -8x + 40$$

$$y = -\frac{8}{10}x + \frac{40}{10}$$

$$y = -\frac{4}{5}x + 4$$



$8 \cdot 0 + 4 \cdot 0 < 40$