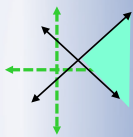
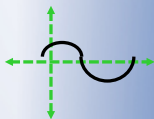


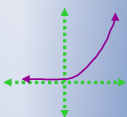
$$5x - 2y \leq 75$$



$$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$$



$$S = Pe^{rt}$$



$$APY = \left(1 + \frac{r}{n}\right)^n - 1$$

## Math 1090 ~ Business Algebra

### Section 1.7 Linear Inequalities in Two Variables

Objectives:

- Simplify and graph a linear inequality in two variables.
- Graph a system of linear inequalities.
- Determine the solution set to a system of inequalities.

Linear Inequality : essentially a line equation where the = sign is replaced w/ an inequality sign

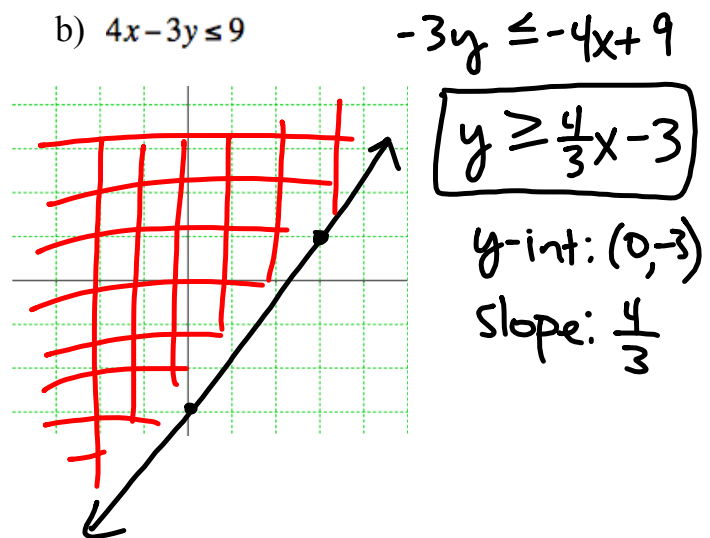
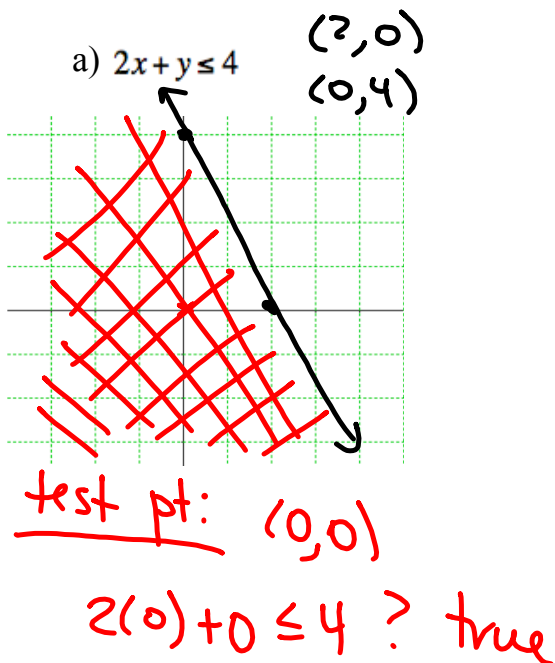
Linear system of inequalities :

a set of 2 or more linear inequalities that we solve simultaneously

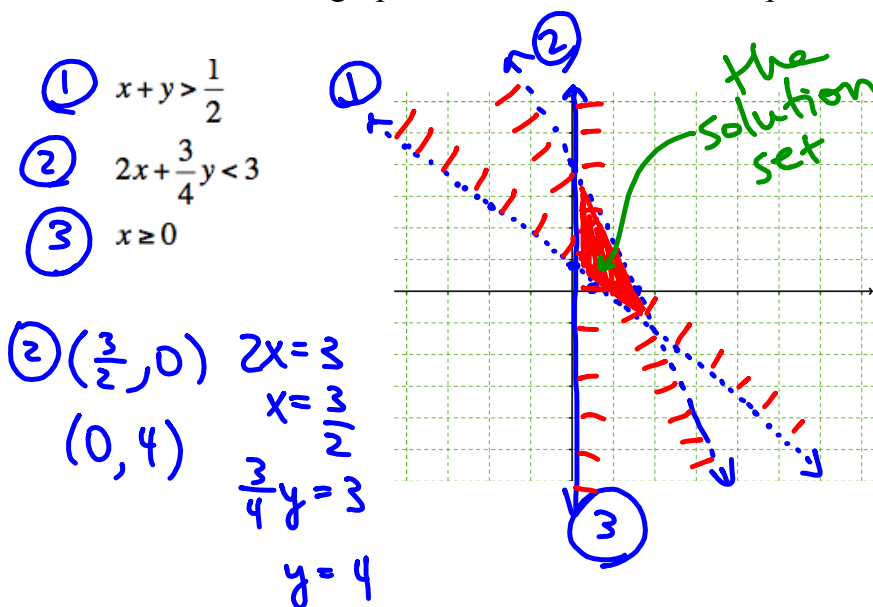
Solution Set

the 2d region (we'll shade in) that satisfies all linear inequalities in the system

Ex 1: Graph the solution set.



Ex 2: Solve and graph the solution set on a 2d plane.



test pt: (0,0)

①  $0 + 0 > \frac{1}{2}?$   
false

②  $2(0) + \frac{3}{4}(0) < 3?$   
 $0 < 3?$   
true

Ex 3: Solve and graph the solution set.

- ①  $-5x - y > -3$
- ②  $x - 2y < 12$
- ③  $y \leq 0$
- ④  $x \geq 0$

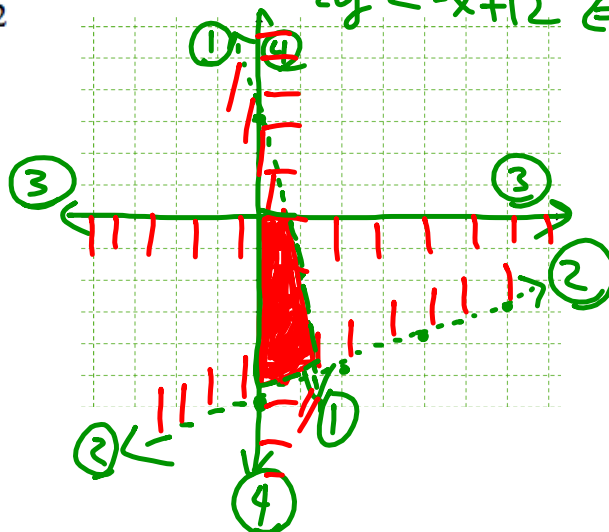
①  $-5x + 3 - y > 0$

②  $-5x + 3 > y$

②  $-2y < -x + 12$

or  $y < -5x + 3$

$y > \frac{1}{2}x - 6$



Ex 4: A furniture company makes and sells two types of tables, one small and one large. Each large table requires two hours of assembly and two hours of finish work. Each small table requires 3 hours of assembly and  $1\frac{1}{4}$  hours of finish work. The assembly shop is open a maximum of 12 hours per day. The finishing shop is available for 10 hours per day. Find the system of linear inequalities to represent this and graph solutions.

