

MA 110 SECTION 5.2: SYTEMS OF LINEAR INEQUALITIES IN TWO VARIABLES

**HOMEWORK: 1, 5, 9, 17, 21, 29, 39, 43, 45**

1. We have discussed graphing one linear inequality. We will now discuss graphing a system of linear inequalities. In graphing a system of linear inequalities we find the feasible region or solution region. This region contains all the points that satisfy all of the inequalities in the system simultaneously.

EXAMPLE:

$$x + 3y \leq 18$$

$$2x + y \leq 16$$

$$x \geq 0$$

$$y \geq 0$$

2. The feasible region is either bounded or unbounded. Page 270
3. The corner points will be important in future linear programming problems. Corner points of a solution (feasible) region are formed by the intersection of two boundary lines. Page 269

4. Graph the feasible region, state whether the region is bounded or unbounded, and find the corner points for the system.

$$2x + 3y \geq 24$$

$$x + 3y \geq 15$$

$$x \geq 0$$

$$y \geq 0$$

5. What if the inequality  $y \geq 0$  was replaced with  $y \geq 1$ ?

$$2x + 3y \geq 24$$

$$x + 3y \geq 15$$

$$x \geq 0$$

$$y \geq 1$$

6. What if the inequality  $y \geq 0$  was replaced with  $y \leq 7$ ?

$$2x + 3y \geq 24$$

$$x + 3y \geq 15$$

$$x \geq 0$$

$$y \leq 7$$