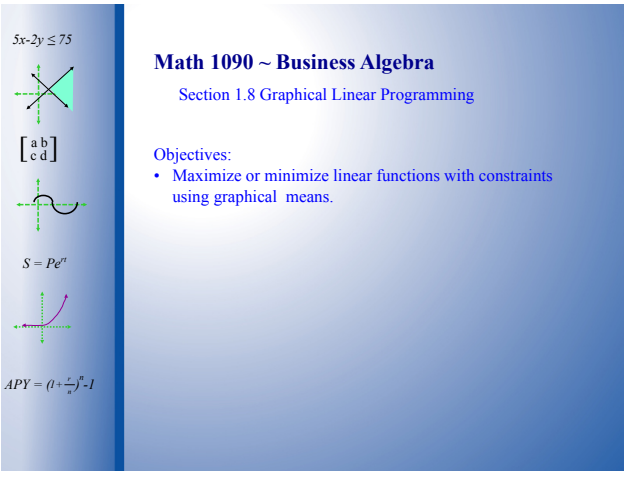


Graphical Linear Programming

Linear Programming

Closed and Bounded Region

Constraints

Feasible Region

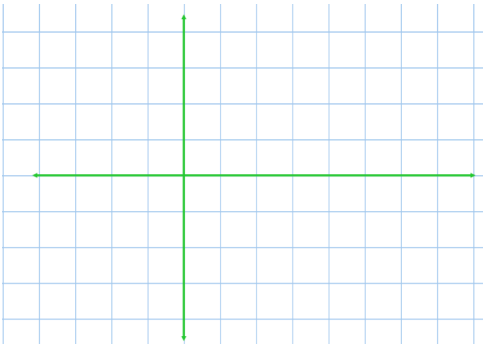
Optimal Solutions

Graphical Linear Programming Procedures

1. Graph all constraints on the same axes.
2. Shade in the feasible region
3. Find and label vertices.
4. Plug in the corner points to the objective function to determine which gives the maximum or minimum as desired.

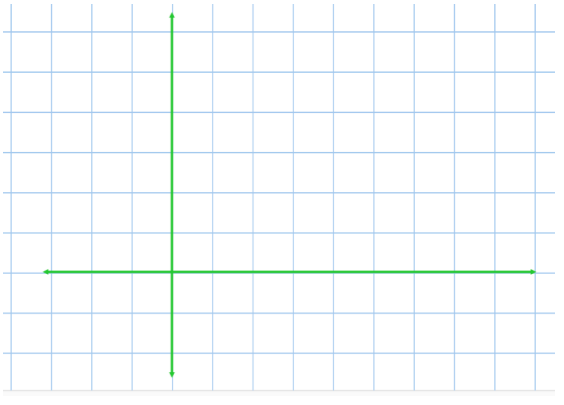
Ex 1: Find the minimum and maximum values of the objective function, $f = 4x + 3y$ on the feasible region given by

$$2x + 3y \le 12$$
$$4x - 2y \le 8$$
$$x \ge 0, \quad y \ge 0$$



Ex 2: Minimize $g = 22x - 17y$ subject to these constraints.

$$8x + 5y \ge 100$$
$$12x + 25y \ge 360$$
$$x \ge 0, \quad y \ge 0$$



Ex 3: A contractor builds two types of homes. The Carolina requires one lot, $160,000 capital and 160 worker-days of labor. The Savannah requires one lot, $240,000 capital and 160 worker-days of labor. The contractor owns 300 lots and has $48,000,000 available capital and 43,200 worker-days of labor. The profit on the Carolina is $40,000 and on the Savannah, it's $50,000. How many of each type of home should be built to maximize profit? What is the maximum profit?