

§6-5 Optimization Problems II: Exploring Solutions

Explore the feasible region to help find a point that optimizes the objective function.

Example - Toy company (p332)

Let x be the number of SUVs

y be the number of racing cars

Restrictions:

$$x \in \mathbb{W}$$

$$y \in \mathbb{W}$$

Constraints:

$$x \leq 60$$

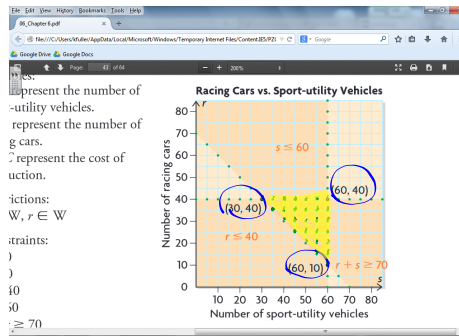
$$y \leq 40$$

$$x + y \geq 70$$

Objective Function:

$$C = 12x + 8y$$

Cost



Possible Combinations
 (30, 40)
 (60, 40)
 (60, 10)

Substitute each each combination into the objective

function: $C = 12x + 8y$

SUV car $(30, 40)$ $C = 12(30) + 8(40) = 360 + 320 = \text{\$}680$ ^{MIN}

$(60, 40)$ $C = 12(60) + 8(40) = 720 + 320 = \text{\$}1040$ ^{MAX}

$(60, 10)$ $C = 12(60) + 8(10) = 720 + 80 = \text{\$}800$

30 SUVs and 40 cars will give the minimum cost ^(\\$680)
 60 SUVs and 40 cars will give the maximum cost. ^(\\$1040)

Optimal solution

A point in the solution set (feasible region) that represents the maximum or minimum value of the objective function.

TO DO

- ① Readover summary (p333)
- ② p 334-335
- ③ Be sure all practice is done (§6-1 to §6-4)
- ④ Any outstanding groupwork?