Exercise 7.1

1. Personal mini warehouse is planning to expand its successful Orlando business into Tampa. In doing so, the company must determine how many storage room of each size to build. Its objective and constraints follow:

Maximize monthly earnings = 50 X1 + 20 X2

Subject to 2X1 + 4 X2 ≤ 400 (advertising budget available)

100X1 + 50 X2 ≤ 8000 (square footage required)

X1 ≤ 60 (rental limit expected)

Where : X1 = number of large spaces developed

X2 = number of small spaces developed

2. Solve the following LP formulation graphically, using the isocost line approach:

Minimize costs = 24X1 + 28 X2

Subject to 5 X1 + 4 X2 ≤ 2000

X1 ≥ 80

X1 + X2 ≥ 300

X2 ≥ 100

X1, X2 ≥ 0

3. Solve the following problem, using the corner point method.

Maximize profit = 30 X1 + 40 X2

Subject to 4 X1 + 2 X2 ≤ 16

2 X1 – X2 ≥ 2

X2 ≤ 2

X1, X2 ≥ 0