Mohammad Ali Jinnah University
Department of Computer Science
CS2420: Operations Research
Semester Spring 2022

Dated: 29th March 2022
Due Date: 7th April 2022
Home Work # 4

SIMPLEX ALGORITHM (10 points each)

Home Work # 4

Name: Muhammad Fahad

ID: FA19-BSSE-0014

Teacher: Dr. Abdul Qadar Kara

Section: BM

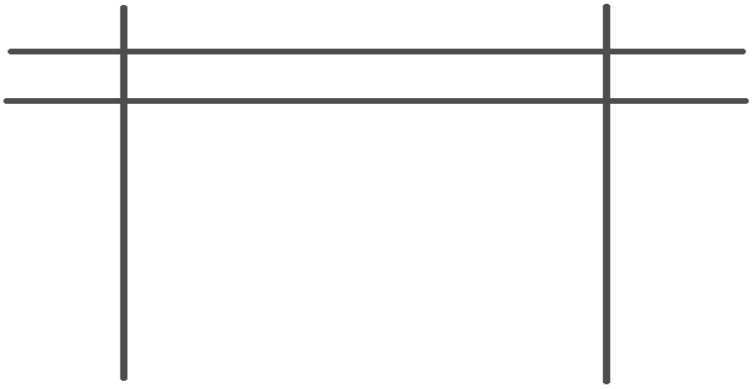
1. Consider the following set of constraints:

$$x_1 + x_2 + x_3 = 7$$
$$2x_1 - 2x_2 + x_3 \geq 10$$
$$x_1, x_2, x_3 \geq 0$$

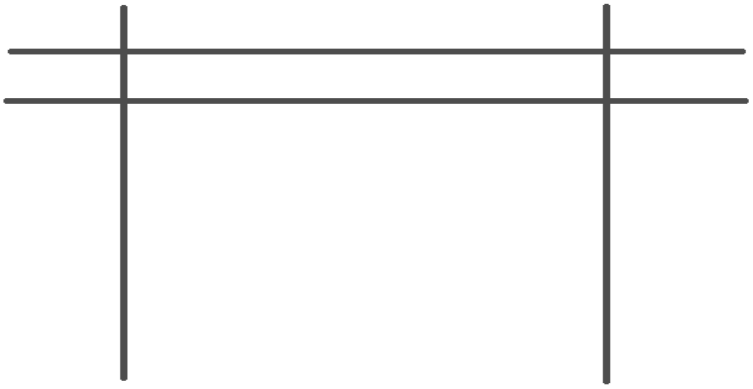
Constraints:

(a) Maximize $z = 2x_1 + 3x_2 - 5x_3$ (Use Big M-Method)

(b) Minimize $z = 2x_1 + 3x_2 - 5x_3$ (Use Two-Phase Method)



(c) (Optional) Maximize $z = x_1 + 2x_2 + x_3$ (Use Big M-Method)



(d) (Optional) Minimize $z = 4x_1 - 8x_2 + 3x_3$ (Use Two-Phase Method)

2. Consider the following LP:

$$\text{Maximize } z = 2x_1 + 2x_2 + 4x_3$$

Subject to

$$2x_1 + x_2 + x_3 \leq 2$$
$$3x_1 + 4x_2 + 2x_3 \geq 10$$
$$x_1, x_2, x_3 \geq 0$$

Solve using any (of the two discussed) method.

Use Two-Phase Method:

Big M-Method: