MAJU

Department of Computer ScienceCS2420: Operations Research Semester Spring 2022

Dated: 22th March 2022
Due Date: 29nd March 2022 (In Class)
Home Work #3
Total Points 30 Points

Home Work # 3

Name: Muhammad Fahad

ID: FA19-BSSE-0014

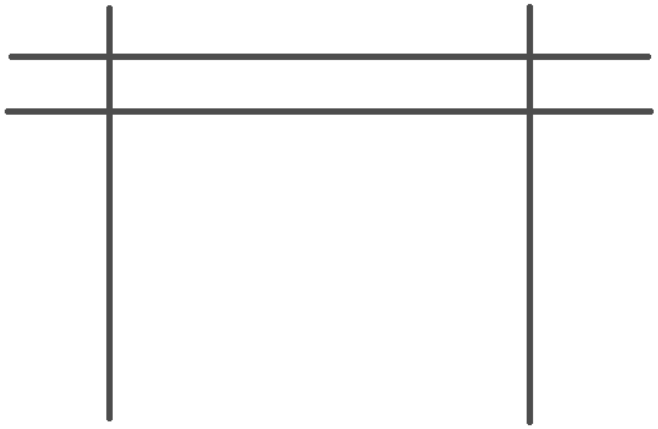
Teacher: Dr. Abdul Qadar Kara

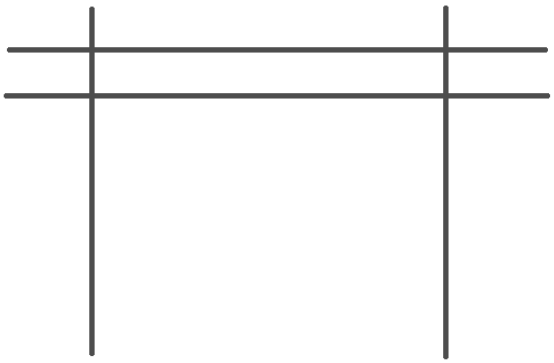
Section: BM

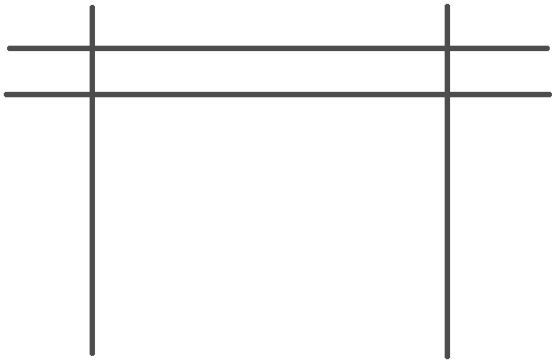
1. Consider the following set of constraints:

$$\boldsymbol{x_1 + x_2 + 2x_3 + 2x_4 \leq 42}$$
$$\boldsymbol{2x_1 - x_2 + x_3 + 2x_4 \leq 8}$$
$$\boldsymbol{4x_1 - 2x_2 + x_3 - x_4 \leq 12}$$
$$\boldsymbol{x_1, x_2, x_3, x_4 \geq 0}$$

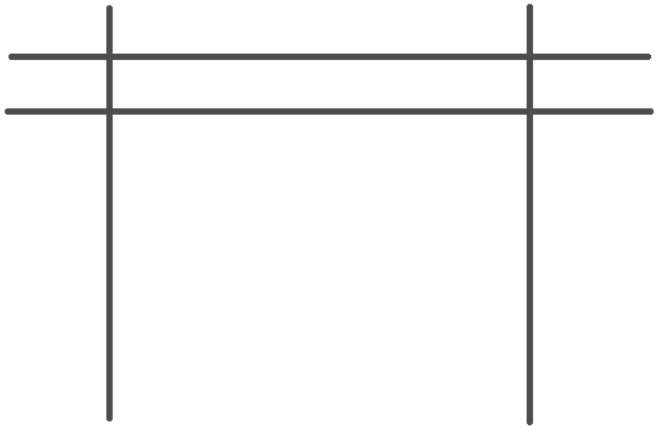
(a) Maximize $z = 2x_1 + x_2 - 3x_3 + 5x_4$

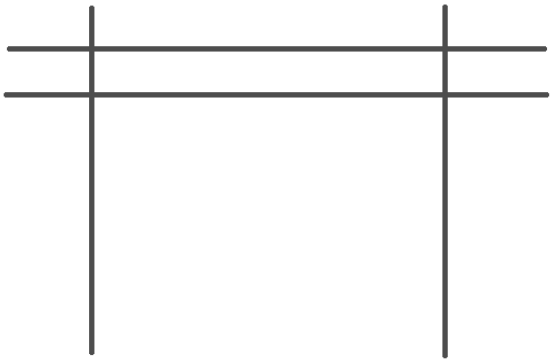


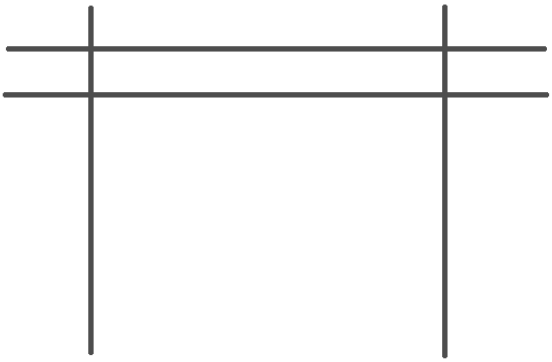




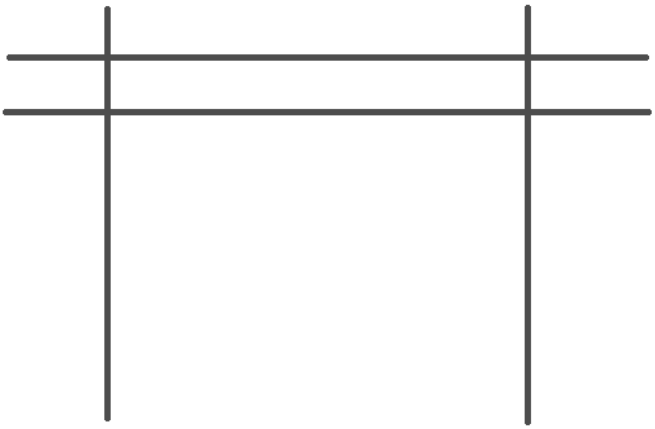
(b) (Optional) Maximize $z = 8x_1 + 6x_2 + 3x_3 - 2x_4$

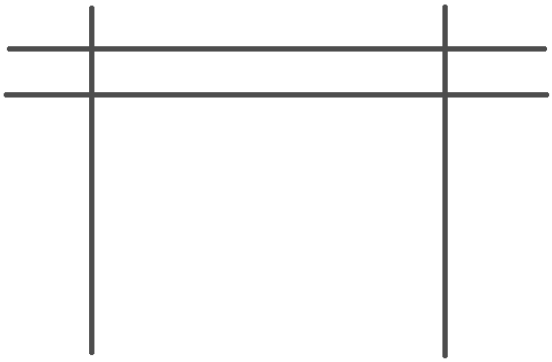


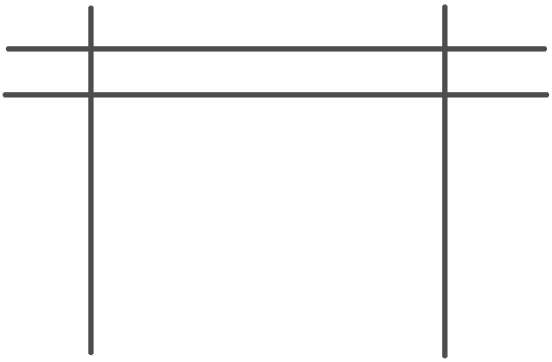




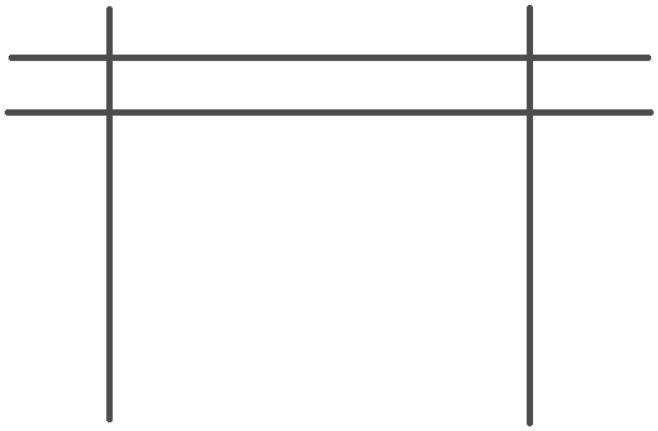
(c) (Optional) Maximize $z = 3x_1 - x_2 + 3x_3 + 4x_4$

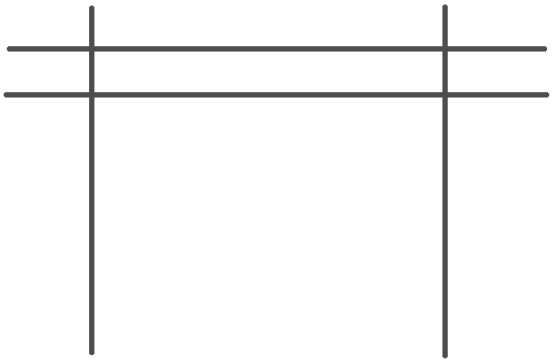


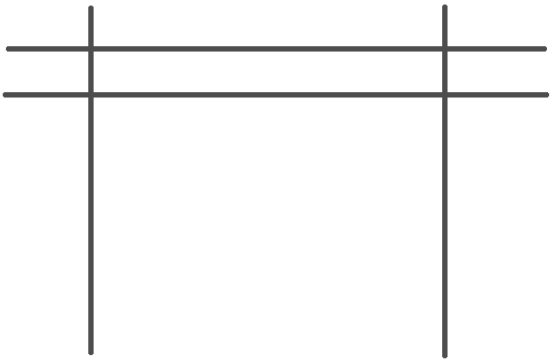




(d) Minimize $z = 5x_1 - 4x_2 + 6x_3 - 8x_4$ (Hint: Multiply the objective function by -1 and maximize)

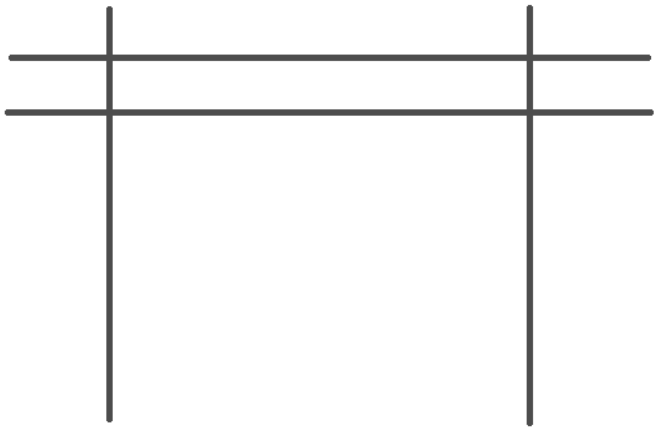
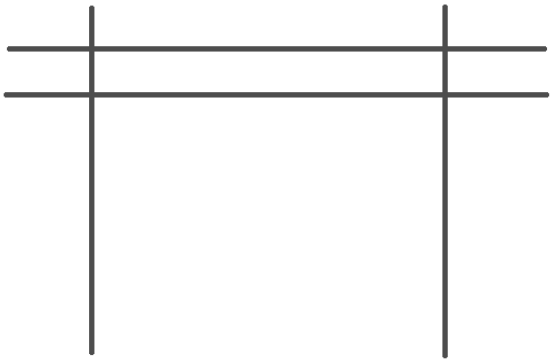
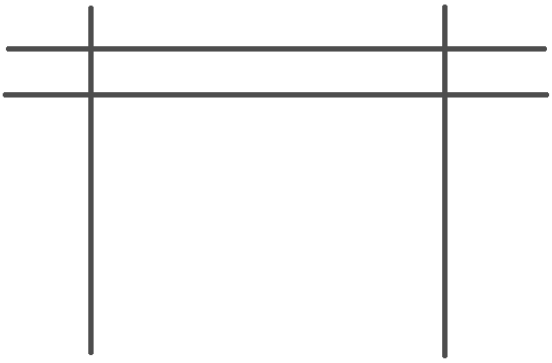






2. Consider the following LP:

Subject to

Maximize $z = 20x_1 + 15x_2$

$$15x_1 + 20x_2 \leq 120$$
$$-x_1 + x_2 \leq 1$$
$$x_1 \leq 3$$
$$x_1, x_2 \geq 0$$