MAJU

**Department of Computer Science CS2420: 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**

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**Teacher:** Dr. Abdul Qadar Kara

**Section:** BM

1. Consider the following set of constraints:

𝒙𝟏 + 𝒙𝟐 + 𝟐𝒙𝟑 + 𝟐𝒙𝟒 ≤ 𝟒𝟐

𝟐𝒙𝟏 − 𝒙𝟐 + 𝒙𝟑 + 𝟐𝒙𝟒 ≤ 𝟖

𝟒𝒙𝟏 − 𝟐𝒙𝟐 + 𝒙𝟑 − 𝒙𝟒 ≤ 𝟏𝟐

𝒙𝟏, 𝒙𝟐, 𝒙𝟑, 𝒙𝟒 ≥ 𝟎

1. Maximize 𝑧 = 2𝑥1 + 𝑥2 − 3𝑥3 + 5𝑥4





(b) (Optional) Maximize 𝑧 = 8𝑥1 + 6𝑥2 + 3𝑥3 − 2𝑥4





(c) (Optional) Maximize 𝑧 = 3𝑥1 − 𝑥2 + 3𝑥3 + 4𝑥4





(d) Minimize 𝑧 = 5𝑥1 − 4𝑥2 + 6𝑥3 − 8𝑥4 (Hint: Multiply the objective function by -1 and maximize)





1. Consider the following LP: Subject to

Maximize 𝑧 = 20𝑥1 + 15𝑥2 15𝑥1 + 20𝑥2 ≤ 120

−𝑥1 + 𝑥2 ≤ 1

𝑥1 ≤ 3

𝑥1, 𝑥2 ≥ 0



