



### Lab Sheet-8

#### Integer Linear Programming problem

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Write a MATLAB code for the following ILPs using Gomory's cutting plane method and give a detailed output.

1.

$$\begin{aligned} \text{Maximize } Z &= 5x_1 + 7x_2 \\ \text{subject to } -2x_1 + 3x_2 &\leq 6, \\ 6x_1 + x_2 &\leq 30, \\ x_1, x_2 &\in \mathbb{Z}^+ \cup \{0\} \end{aligned}$$

2.

$$\begin{aligned} \text{Maximize } Z &= x_1 + x_2 \\ \text{subject to } 2x_1 + 5x_2 &\leq 16, \\ 6x_1 + 5x_2 &\leq 30, \\ x_1 &\geq 0, \\ x_2 &\in \mathbb{Z}^+ \cup \{0\} \end{aligned}$$

3.

$$\begin{aligned} \text{Minimize } Z &= 10x_1 + 9x_2 \\ \text{subject to } x_1 &\leq 8, \\ x_2 &\leq 10, \\ 5x_1 + 3x_2 &\geq 45, \\ x_1 &\geq 0, \\ x_2 &\in \mathbb{Z}^+ \cup \{0\} \end{aligned}$$

\*\*\*\*\* End \*\*\*\*\*