

A Minimization Mixed-Integer Program

We will apply a branch and bound method to solve the following integer program.

$$\begin{aligned} & \text{minimize } 5x_1 + x_2 + x_3 + 2x_4 + 3x_5 \\ & \text{subject to} \end{aligned} \tag{IP}$$
$$\begin{aligned} x_2 - 5x_3 + x_4 + 2x_5 & \geq -2 \\ 5x_1 - x_2 + x_5 & \geq 7 \\ x_1 + x_2 + 6x_3 + x_4 & \geq 4 \\ x_1, x_2, x_3, x_4, x_5 & \geq 0 \\ x_1, x_2, x_3 & \text{ integer} \end{aligned}$$