

23. Work on problem 1 of Section 4.6 in the textbook.
24. Use the LINDO Computer Package to solve each of the following LPs (attach copies of your input and output): Homework Problems 19, 9, 3, 13, 10, and Examples 4.6 and 1.1 from the Lecture Notes.
25. Use the Big M-Method to solve the following LPs:

$$(i) \begin{cases} 5x_1 - 3x_2 + x_3 \rightarrow \min \\ 2x_1 + x_2 + x_3 = 6 \\ x_1 + 2x_2 + x_3 = 6 \\ x_1, x_2, x_3 \geq 0, \end{cases} \quad (ii) \begin{cases} x_1 + x_3 \rightarrow \max \\ 2x_1 + x_2 + 2x_3 = 6 \\ 2x_2 + x_3 = 6 \\ x_1, x_2, x_3 \geq 0. \end{cases}$$

26. Use the Two-Phase Simplex Method to solve the following LPs:

$$(i) \begin{cases} -x_1 - 5x_2 - 2x_3 \rightarrow \min \\ 4x_1 + x_2 + 3x_3 \leq 6 \\ 3x_1 + 2x_2 + 6x_3 \leq 12 \\ -x_1 - 4x_2 - 2x_3 \leq -8 \\ x_1, x_2, x_3 \geq 0, \end{cases} \quad (ii) \begin{cases} 2x_1 + 2x_2 + 4x_3 - x_4 \rightarrow \min \\ x_1 + 2x_2 + 2x_4 = 1 \\ x_1 + x_2 + 2x_3 = 1 \\ x_1, x_2, x_3, x_4 \geq 0. \end{cases}$$

27. **(30 Points Extra Credit)** Write a program to solve an LP of the form

$$\begin{cases} c^T x \rightarrow \min \\ Ax \leq b \\ x \geq 0, \end{cases}$$

where $b \geq 0$. Assume that the LP is not degenerate. Test your program with the LPs given in Problem 24 above.