41. Solve the following transportation problems (manually), where a is the supply vector, b is the demand vector, and C is the cost matrix. Use the northwest corner method to find an initial bfs.

(i)

$$a = \begin{bmatrix} 45 \\ 40 \end{bmatrix}, b = \begin{bmatrix} 25 \\ 30 \\ 30 \end{bmatrix}, C = \begin{bmatrix} 6 & 3 & 0 \\ 9 & 5 & 0 \end{bmatrix}$$

(ii)

$$a = \begin{bmatrix} 12 \\ 8 \end{bmatrix}, b = \begin{bmatrix} 7 \\ 5 \\ 6 \\ 2 \end{bmatrix}, C = \begin{bmatrix} 3 & 2 & 5 & 0 \\ 4 & 1 & 2 & 0 \end{bmatrix}$$

(iii)

$$a = \begin{bmatrix} 5 \\ 6 \\ 5 \\ 2 \end{bmatrix}, b = \begin{bmatrix} 5 \\ 7 \\ 6 \end{bmatrix}, C = \begin{bmatrix} 6 & 3 & 7 \\ 4 & 3 & 5 \\ 9 & 10 & 11 \\ 0 & 0 & 0 \end{bmatrix}$$

42. For the one from the previous problem that required the largest number of iterations, use the minimum cost method (instead of the northwest corner method) to find an initial bfs.
43. Work on Problem 1 of Section 7.5 in the textbook.
44. Work on Problem 2 of Section 7.6 in the textbook.