

ITEC451 Activity 3 Solution

Chapter 2 - Section 2.3 Problems (Textbook page 32)

$$6. \quad \begin{bmatrix} 0 & 2 & 2 & 4 \\ 1 & 2 & 1 & 4 \\ 0 & 1 & -1 & 0 \end{bmatrix} \quad \begin{bmatrix} 1 & 2 & 1 & 4 \\ 0 & 2 & 2 & 4 \\ 0 & 1 & -1 & 0 \end{bmatrix} \quad \begin{bmatrix} 1 & 2 & 1 & 4 \\ 0 & 1 & 1 & 2 \\ 0 & 1 & -1 & 0 \end{bmatrix} \quad \begin{bmatrix} 1 & 0 & -1 & 0 \\ 0 & 1 & 1 & 2 \\ 0 & 1 & -1 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 & -1 & 0 \\ 0 & 1 & 1 & 2 \\ 0 & 0 & -2 & -2 \end{bmatrix} \quad \begin{bmatrix} 1 & 0 & -1 & 0 \\ 0 & 1 & 1 & 2 \\ 0 & 0 & 1 & 1 \end{bmatrix} \quad \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 2 \\ 0 & 0 & 1 & 1 \end{bmatrix} \quad \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}$$

Thus original system has a unique solution $x_1 = x_2 = x_3 = 1$.

$$7. \quad \begin{bmatrix} 1 & 1 & 0 & 2 \\ 0 & -1 & 2 & 3 \\ 0 & 1 & 1 & 3 \end{bmatrix} \quad \begin{bmatrix} 1 & 1 & 0 & 2 \\ 0 & 1 & -2 & -3 \\ 0 & 1 & 1 & 3 \end{bmatrix} \quad \begin{bmatrix} 1 & 0 & 2 & 5 \\ 0 & 1 & -2 & -3 \\ 0 & 1 & 1 & 3 \end{bmatrix} \quad \begin{bmatrix} 1 & 0 & 2 & 5 \\ 0 & 1 & -2 & -3 \\ 0 & 0 & 3 & 6 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 & 2 & 5 \\ 0 & 1 & -2 & -3 \\ 0 & 0 & 1 & 2 \end{bmatrix} \quad \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & -2 & -3 \\ 0 & 0 & 1 & 2 \end{bmatrix} \quad \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 2 \end{bmatrix}$$

Thus the original system has the unique solution $x_1 = 1$,
 $x_2 = 1$, $x_3 = 2$.