Chapter 1 Homework from Kreyszig

Gauss-Jordan Elimination (Kreyszig page 295)

Solve the following systems or indicate the nonexistence of solutions.

1. $$\begin{aligned} 5x - 2y &= 20.9 \\ -x + 4y &= -19.3 \end{aligned}$$

2. $$\begin{aligned} 3.0x + 6.2y &= 0.2 \\ 2.1x + 8.5y &= 4.3 \end{aligned}$$

3. $$\begin{aligned} 0.5x + 3.5y &= 5.7 \\ -x + 5.0y &= 7.8 \end{aligned}$$

4. $$\begin{aligned} 4y - 2z &= 2 \\ 6x - 2y + z &= 29 \\ 4x + 8y - 4z &= 24 \end{aligned}$$

5. $$\begin{aligned} 0.8x + 1.2y - 0.6z &= -7.8 \\ 2.6x + 1.7z &= 15.3 \\ 4.0x - 7.3y - 1.5z &= 1.1 \end{aligned}$$

6. $$\begin{aligned} 14x - 2y - 4z &= 0 \\ 18x - 2y - 6z &= 0 \\ 4x + 8y - 14z &= 0 \end{aligned}$$

7. $$\begin{aligned} y + z &= -2 \\ 4y + 6z &= -12 \\ x + y + z &= 2 \end{aligned}$$

8. $$\begin{aligned} 2x + y - 3z &= 8 \\ 5x + 2z &= 3 \\ 8x - y + 7z &= 0 \end{aligned}$$

9. $$\begin{aligned} 4y + 4z &= 24 \\ 3x - 11y - 2z &= -6 \\ 6x - 17y + z &= 18 \end{aligned}$$

10. $$\begin{aligned} 0.6x + 0.3y - 0.4z &= -1.9 \\ -4.6x + 0.5y + 1.2z &= -1.3 \end{aligned}$$

11. $$\begin{aligned} 2x - y + 3z &= -1 \\ -4x + 2y - 6z &= 2 \end{aligned}$$

12. $$\begin{aligned} -2y - 2z &= -8 \\ 3x + 4y - 5z &= 13 \end{aligned}$$

13.
$$\begin{aligned} x + y - 2z &= 0 \\ -4w - x - y + 2z &= -4 \\ -2w + 3x + 3y - 6z &= -2 \end{aligned}$$

14.
$$\begin{aligned} w - 2x + 5y - 3z &= 0 \\ -3w + 6x + y + z &= 0 \\ 2w - 4x + 3y - z &= 3 \end{aligned}$$

15.
$$\begin{aligned} 3x + 7y - 4z &= -46 \\ 5w + 4x + 8y + z &= 7 \\ 8w + 4y - 2z &= 0 \\ -w + 6x + 2z &= 13 \end{aligned}$$

16.
$$\begin{aligned} -2w - 17x + 4y + 3z &= 0 \\ 7w + 3y - 2z &= 0 \\ 2x + 8y - 6z &= -20 \\ 5w - 13x - y + 5z &= 16 \end{aligned}$$