

1. Solve the system of linear equations using the Gauss - Jordan elimination method.

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

Solution:

$$\left[\begin{array}{ccc|c} 1 & 1 & -2 & -3 \\ 2 & -1 & 3 & 7 \\ 1 & -2 & 5 & 0 \end{array} \right] \xrightarrow{\substack{R_2 - 2R_1 \\ R_3 - R_1}} \left[\begin{array}{ccc|c} 1 & 1 & -2 & -3 \\ 0 & -3 & 7 & 13 \\ 0 & -3 & 7 & 3 \end{array} \right]$$

$$\xrightarrow{R_3 - R_2} \left[\begin{array}{ccc|c} 1 & 1 & -2 & -3 \\ 0 & -3 & 7 & 13 \\ 0 & 0 & 0 & -10 \end{array} \right]$$

Since $0 \neq -10$, the system of linear equations has no solution.