

Problem 1

Use row reduction on the appropriate augmented matrix to solve the following system of equations:

$$\begin{aligned}3x + 2y &= 2 \\ x - y &= 1\end{aligned}$$

Problem 2

Use row reduction on the appropriate augmented matrix to solve the following system of equations:

$$\begin{aligned}2x + 4y + z &= 0 \\ x - y + z &= 2 \\ x + 3y + z &= 1\end{aligned}$$

Problem 3

Which of the following matrices are in reduced row-echelon form? $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$, $\begin{bmatrix} 1 & 0 & 0 & 8 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & 1 \end{bmatrix}$, $\begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & 1 \end{bmatrix}$,

$$\begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}, \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}, \begin{bmatrix} 1 & 2 & 3 & 4 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

Problem 4

Determine conditions on a , b and c so that the following system has solutions:

$$\begin{aligned} 2x + y + z &= a \\ x - 2y + z &= b \\ 3x - y + 2z &= c \end{aligned}$$