

Quiz 2

1. Is the matrix $\begin{bmatrix} 1 & -2 & 1 \\ 4 & -7 & 3 \\ -2 & 6 & -4 \end{bmatrix}$ invertible? Why or why not?

2. Is the linear transformation given by $T(x_1, x_2) = (2x_1 - x_2, 3x_1)$ one-to-one? Why or why not?

3. Given $A = \begin{bmatrix} 6 & -9 & 4 & 0 & 0 & 2 \\ 0 & -2 & 5 & 11 & 7 & -1 \\ 0 & 0 & 1 & 0 & 2 & 5 \\ 0 & 0 & 0 & -3 & 4 & -8 \\ 0 & 0 & 0 & 0 & 5 & -2 \\ 0 & 0 & 0 & 0 & 0 & 4 \end{bmatrix}$ and $\mathbf{b} = \begin{bmatrix} 4 \\ -6 \\ 2 \\ 12 \\ -4 \\ 0 \end{bmatrix}$. Does the system $A\mathbf{x} = \mathbf{b}$ have a solution? Why or why not?