
Exercise 1 Consider the system of equations:

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

Let A be the coefficient matrix corresponding to this system, and let $\mathbf{b} = \begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}$.

Suppose that we find that $(1, -2, -5)$ is a unique solution to this system. What does this tell us? Select ALL that apply.

Select All Correct Answers:

1. A is invertable.
2. Vector $\mathbf{b}$ is in the span of the columns of A .
3. Columns of A are linearly dependent.
4. Equation $A\mathbf{x} = \mathbf{b}$ has a unique solution.
5. Vector $\mathbf{b}$ can be written as a linear combination of the columns of A .
6. $A\mathbf{b} = \begin{bmatrix} 1 \\ -2 \\ -5 \end{bmatrix}$