

EXAMPLE

$$\text{Let } \mathbf{a}_1 = \begin{bmatrix} 1 \\ -2 \\ 3 \end{bmatrix}, \quad \mathbf{a}_2 = \begin{bmatrix} 5 \\ -13 \\ -3 \end{bmatrix}, \quad \text{and } \mathbf{b} = \begin{bmatrix} 3 \\ 8 \\ 2 \end{bmatrix}.$$

- (a) Give a geometric interpretation of $\text{span}\{\mathbf{a}_1, \mathbf{a}_2\}$.
- (b) Is $\mathbf{b} \in \text{span}\{\mathbf{a}_1, \mathbf{a}_2\}$?



RESULT

The columns of matrix A are linearly independent if and only if $A\mathbf{x} = \mathbf{0}$ has **only** the trivial solution.



PROBLEM

Is the following set from P_2
linearly independent?

$$S = \{1 + x - 2x^2, 2 + 5x - x^2, x + x^2\}$$

