

MATH 3D Prep: Linear Independence

Facts to Know:

- A set of vectors $\vec{v}_1, \vec{v}_2, \dots, \vec{v}_n$ is *linearly independent* if:

whenever _____,

we have _____.

- Polynomials of degree ≤ 2 can be viewed as vectors in \mathbb{R}^3 :

Examples:

1. Determine whether the vectors $\vec{u} = \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}$, $\vec{v} = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$, and $\vec{w} = \begin{bmatrix} 0 \\ 2 \\ -2 \end{bmatrix}$ are linearly independent.

2. Determine whether the polynomials x , $x + 1$, and x^2 are linearly independent.