

1. Are the columns of $A = \begin{bmatrix} 1 & 2 & -3 \\ 2 & -3 & 4 \\ -1 & 3 & 2 \end{bmatrix}$ linearly independent or linearly dependent?

2. Do the vectors $\mathbf{v}_1 = \begin{bmatrix} 2 \\ 0 \\ 3 \end{bmatrix}$, $\mathbf{v}_2 = \begin{bmatrix} 0 \\ -1 \\ 6 \end{bmatrix}$, $\mathbf{v}_3 = \begin{bmatrix} -2 \\ -4 \\ 21 \end{bmatrix}$ lie in the same plane in \mathbb{R}^3 ?

3. If A is a 4×5 matrix, are the columns linearly independent or linearly dependent? What if A is 5×4 ?