

Quiz #6

Please print your name:

Problem 1. Decide whether the following sets of vectors are a basis of \mathbb{R}^3 .

No computations necessary!

(a) $\begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 4 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$ basis of \mathbb{R}^3 not a basis of \mathbb{R}^3

(b) $\begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 4 \end{bmatrix}$ basis of \mathbb{R}^3 not a basis of \mathbb{R}^3

(c) $\begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 4 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} 4 \\ 1 \\ 0 \end{bmatrix}$ basis of \mathbb{R}^3 not a basis of \mathbb{R}^3

(d) $\begin{bmatrix} 2 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} -1 \\ 7 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 5 \end{bmatrix}$ basis of \mathbb{R}^3 not a basis of \mathbb{R}^3

(e) $\begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \\ 0 \end{bmatrix}$ basis of \mathbb{R}^3 not a basis of \mathbb{R}^3

Problem 2. Decide whether the vectors $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}, \begin{bmatrix} -1 \\ 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 6 \\ 7 \end{bmatrix}$ are a basis of \mathbb{R}^3 .

(Make sure to show your work!)