

Supplementary Practice Test 2

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1. Consider the list of vectors $L = \left(\begin{bmatrix} 1 \\ 2 \\ 3 \\ 5 \end{bmatrix}, \begin{bmatrix} -1 \\ 4 \\ 1 \\ 17 \end{bmatrix}, \begin{bmatrix} 19 \\ 17 \\ 43 \\ 18 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \\ 4 \\ -1 \end{bmatrix} \right)$ in \mathbb{R}^4 .
 - 1.1. Describe the span of L .
 - 1.2. Is L linearly independent in \mathbb{R}^4 ?
 - 1.3. Determine whether L is a basis for \mathbb{R}^4
 - 1.4. Compute the dimension of the span of L .
2. Is the set

$$U = \left\{ \begin{bmatrix} a_1 \\ a_2 \\ a_3 \\ a_4 \end{bmatrix} \in \mathbb{Z}_7^4 : a_1 + a_2 + a_3 + a_4 = 0 \pmod{7} \right\}.$$

a subspace of \mathbb{Z}_7^4 ?