KUTAISI INTERNATIONAL UNIVERSITY

Quiz 4(G-1)

Linear Algebra for Informatics
Fall semester 2024
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Problem

$$W = \left\{ \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} \in \mathbb{R}^3 : x_1^2 + x_2 + x_3 = 0 \right\}$$

Is W a subspace of $\mathbb{R}^3$? Explain your answer

Problem

Find the kernel of the linear transformation $T : \mathbb{R}^2 \to \mathbb{R}^2$ Given by

$$T\begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{pmatrix} 12 & -1 \\ 3 & 0 \end{pmatrix}\begin{pmatrix} x_1 \\ x_2 \end{pmatrix}$$

Problem

Find a basis of the image of the matrix:

$$\begin{pmatrix} 1 & 1 & 1 \\ 1 & 2 & 5 \\ 1 & 3 & 7 \end{pmatrix}$$