Assignment 16

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Download codes from

https://github.com/KUSUMAPRIYAPULAVARTY/assignment16

1 QUESTION

Let T be the linear operator on R^3 defined by

$$T(x_1, x_2, x_3) = \tag{1.0.1}$$

$$(3x_1 + x_3, -2x_1 + x_2, -x_1 + 2x_2 + 4x_3) \tag{1.0.2}$$

What is the matrix of T in the standard ordered basis of R^3?

2 Solution

$$\mathbf{x} = \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} \tag{2.0.1}$$

$$T(\mathbf{x}) = \mathbf{T}\mathbf{x} \tag{2.0.2}$$

The matrix of T in the standard ordered basis from (1.0.2) is

$$\mathbf{T} = \begin{pmatrix} 3 & 0 & 1 \\ -2 & 1 & 0 \\ -1 & 2 & 4 \end{pmatrix} \tag{2.0.3}$$