Matrix Theory Assignment 9

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Abstract—This problem demonstrate a method to find nature linear transformation.

All the codes for the figure in this document can be found at

https://github.com/Ritesh622/Assignment_EE5609/
tree/master/Assignment_9

1 PROBLEM

Let **T** and **U** be the linear operators on $\mathbb{R}^2$ defined by

$$\mathbf{T}(x_1, x_2) = (x_2, x_1) \qquad (1.0.1)$$

and

$$\mathbf{U}(x_1, x_2) = (x_1, 0) \qquad (1.0.2)$$

How would you describe T and U geometrically ?

2 SOLUTION

Geometrically, in the x-y plane, **T** is the reflection about the diagonal x = y and **U** is a projection onto the x-axis.