

Assignment-13

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Abstract—This assignment deals with linear transformation.

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<https://github.com/satyam463/Assignment-13/blob/main/Assignment%2013.tex>

1 PROBLEM STATEMENT

Describe explicitly a linear transformation from R^3 into R^3 which has as its range the subspace spanned by $\begin{pmatrix} 1 & 0 & -1 \end{pmatrix}$ and $\begin{pmatrix} 1 & 2 & 2 \end{pmatrix}$.

2 SOLUTION

Take the transformation T from R^3 to R^3 that makes

$$\begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix} x_1 + \begin{pmatrix} 1 \\ 2 \\ 2 \end{pmatrix} x_2 = 0 \quad (2.0.1)$$

Hence,

$$T(x_1, x_2, x_3) = (x_1 + x_2, 2x_2, -x_1 + 2x_2) \quad (2.0.2)$$