

LINEAR TRANSFORMATIONS.

1. If $T: \mathbb{R}^3 \rightarrow \mathbb{R}^3$ be a linear transformation

$$\text{Such that } T(x, y, z) = (x+2y-z, y+z, x+y-2z)$$

Find basis and dimension of range space of T
and Null space of T . (Apr-22)

2. Find the range space, Null space, rank, nullity
of the linear transformation $T: \mathbb{R}^3 \rightarrow \mathbb{R}^3$

$$\text{defined by } T(x, y, z) = (x+y, x-y, 2x+z)$$

(Apr-23)

3. Let $T: \mathbb{R}^4 \rightarrow \mathbb{R}^3$ be a linear transformation such
that $T(x, y, z, t) = (x-y+z+t, x+2z-t, x+y+2z-3t)$

Find basis, dimension of Range (T), Ker (T).

4. Show that the mapping $T: \mathbb{R}^2 \rightarrow \mathbb{R}^3$ defined by

$$T(a, b) = (a+b, a-b, b) \text{ is a Linear Transform.}$$

Also verify Rank nullity Theorem.