

Consider the matrix given below.

$$[T] = \begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$$

1) Find a basis for the row space of $[T]$.

2) Find a basis for the range of T .

3) Find a basis for the null space of $[T]$

4) What is the associated linear operator T ?

5) Let $[T]^t$ denote the transpose of the matrix $[T]$. Find $[T]^t \cdot [T]$.