

## Tutorial Worksheet No.0

### Exercise 1.

Let  $T$  be a transformation defined by :

$$T : R^3 \longrightarrow R^3$$
$$(x, y, z) \longrightarrow \left(y, z - x, \frac{z}{2} + y\right)$$

1. Calculate  $T(v)$  such that  $v = (3, 4, 1)$ .
2. Is  $T$  a linear transformation?
3. Is  $T$  bijective? if yes determine  $T^{-1}$
4. Determine  $A$  the matrix representation of  $T$
5. Calculate  $A \cdot v$ .