Chapter 1

First set of exercises

Solution 1.1. *Suppose that*

$$x = \sum_{k=1}^{m} c_k v_k = O \tag{1.1}$$

For scalars $c_1, ..., c_k$ not all zero. Apply T in this equation to show

$$T(x) = T\left(\sum_{k=1}^{m} c_k v_k\right) = \sum_{k=1}^{m} c_k T(v_k) = O \tag{1.2}$$

So $\{T(v_1), \ldots, T(v_m)\}$ is linearly independent.