1. Given \( \{v_1, v_2, v_3\} \) are linearly dependent set in \( \mathbb{R}^5 \)

\[ \Rightarrow \text{By Theorem 7:} \quad \text{A set of two or more vectors is linearly dependent if and only if at least one of the vectors is a linear combination of the others.} \]

\[ = 0 \quad v_i = c_2 v_2 + c_3 v_3 \]

Given \( T \) is a linear transformation,

\[ T(v_1) = T(c_2 v_2 + c_3 v_3) \quad [\text{By definition of linear transformation}] \]

\[ T(v_1) = T(c_2 v_2) + T(c_3 v_3) \]

\[ \Rightarrow T(v_1) = c_2 T(v_2) + c_3 T(v_3) \]

From the above it can be observed that \( T(v_1) \) is a linear combination of \( T(v_2), T(v_3) \).

\[ \therefore \text{By Theorem 7:} \quad \{T(v_1), T(v_2), T(v_3)\} \text{ are linearly dependent} \]