V-2 (Section O) Prove both parts of the following.

**Theorem 1**

1. Suppose \( S = \{ \vec{v}_1, \vec{v}_2, \ldots, \vec{v}_{n-1}, \vec{v}_n \} \) is a linearly independent set of vectors and that \( n \geq 2 \). Then \( T = \{ \vec{v}_1, \vec{v}_2, \ldots, \vec{v}_{n-1} \} \) is also linearly independent.

2. Suppose \( S = \{ \vec{v}_1, \vec{v}_2, \ldots, \vec{v}_{n-1}, \vec{v}_n \} \) is a linearly independent set of vectors and that \( \vec{z} \notin \langle S \rangle \). Then \( W = \{ \vec{v}_1, \vec{v}_2, \ldots, \vec{v}_{n-1}, \vec{v}_n, \vec{z} \} \) is also linearly independent.