Extra Homework 01

Problems

- **Extra Problem 01:** Suppose that $S = \{\mathbf{u}_1, \mathbf{u}_2, \cdots, \mathbf{u}_{p-1}, \mathbf{u}_p\}$ is a linearly independent set. Prove the set $T = \{\mathbf{u}_1, \mathbf{u}_2, \cdots, \mathbf{u}_{p-1}\}$ is also linearly independent.
- **Extra Problem 02:** Suppose $S = \{\mathbf{u}_1, \mathbf{u}_2, \cdots, \mathbf{u}_p\}$ is a linearly independent set and that $\mathbf{v} \notin < S >$. Prove the set $W = \{\mathbf{u}_1, \mathbf{u}_2, \cdots, \mathbf{u}_p, \mathbf{v}\}$ is a linearly independent set.
- **Extra Problem 03:** Suppose $S = \{\mathbf{u}_1, \mathbf{u}_2, \cdots, \mathbf{u}_p, \mathbf{u}_{p+1}\}$ is a linearly dependent set and $\mathbf{u}_{p+1} \notin < S >$. Prove the set $U = \{\mathbf{u}_1, \mathbf{u}_2, \cdots, \mathbf{u}_p\}$ is also linearly dependent.