

LA Assignment 4

February 11, 2025

1. Let $A \in F^{n \times n}$ be such that the rows of A form a linearly independent set of vectors in F^n . Show that A is invertible.
2. Let W_1, W_2 be finite-dimensional subspaces of a vector space V . Show that $W_1 + W_2$ is finite dimensional, and furthermore show that

$$\dim(W_1) + \dim(W_2) = \dim(W_1 \cap W_2) + \dim(W_1 + W_2)$$