

- A. True or False? A subset S of a vector space V is a subspace if and only if $\text{Span}(S) = S$.
- B. True or False? Elementary row operations do not change the row space of a matrix.
- C. True or False? Elementary row operations do not change the column space of a matrix.
- D. True or False? Elementary row operations do not change the null space of a matrix.
- E. The column space of an $n \times m$ matrix A is the set of vectors of the form $A\mathbf{x}$, where $\mathbf{x}$ varies over all m -vectors ($m \times 1$ matrices). Find a similar description of the row space of A .
- F. Suppose H and K are subspaces of a vector space V . Must $H + K = \{\mathbf{v} + \mathbf{w} | \mathbf{v} \in H, \mathbf{w} \in K\}$ be a subspace of V ?