

Chapter 5 Worksheet

Prove the following statements:

- (1) If U is a subspace of V and $\dim V < \infty$, then $\dim U \leq \dim V$.
- (2) If $\dim V < \infty$ vectors in V are linearly independent, then they form a basis.
- (3) If $\dim V < \infty$ vectors in V span V , then they form a basis.
- (4) If $\dim V < \infty$ and $V = U \oplus W$, then $\dim V = \dim U + \dim W$.

Hint: answers to these can be found towards the end of chapter 5, but first try them yourself.