

## 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  $V$  are 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.