

## MATH 121

### HOMEWORK 2, DUE SEPTEMBER 24

#### Part I

- (1) a) Let  $W$  be a subspace of  $V$ . If  $V$  is finite dimensional, show that  $W$  is finite dimensional and that  $\dim W \leq \dim V$ .  
b) Show that  $W = V$  if and only if  $\dim W = \dim V$ .
- (2) Axler, page 59, Problem 1.
- (3) Axler, page 59, Problem 2.
- (4) Axler, page 59, Problem 3.

#### Part II

- (5) Axler, page 59, Problem 5.
- (6) Axler, page 59, Problem 6.
- (7) Axler, page 59, Problem 7.
- (8) Axler, page 73, Problem 4.