

**MA 565 Homework 1**  
Due Friday, September 4

Axler Chapter 1, # 1,4,5,6,7,8

1. Let  $U$  and  $W$  be subspaces of a vector space  $V$ . Show that there exists a subspace  $X \subseteq V$  that contains both  $U$  and  $W$ , and such that, if  $Y \subseteq V$  is any other subspace containing  $U$  and  $W$ , then  $X \subseteq Y$ .
2. Show that the subspace  $X \subseteq V$  described in part 1 is unique.