

Homework 2 – due 09/19/03

Math 340

Problems for practice (highly recommended, but not to be handed in):

1.1.4, 1.1.6, 1.1.7,
1.2.3, 1.2.5, 1.2.8, 1.2.15,
1.3.4, 1.3.12, 1.3.19, 1.3.20, 1.3.22
1.4.7, 1.4.17.

Problems to be handed in:

1. Problems 1.2.12 and 1.2.13.

2. Suppose $U \subset \mathbb{R}^n$ and $V \subset \mathbb{R}^n$ are subspaces.

(a) Show that $U \cap V$ and $U + V := \{u + v \mid u \in U, v \in V\}$ are subspaces.

(b) Show that $U \cup V$ is a subspace only if $U \subset V$ or $V \subset U$.

3. Problem 1.4.10, parts (b)-(d). Hint: For (c), consider the cross-product $\begin{bmatrix} v_1 \\ v_2 \\ 0 \end{bmatrix} \times \begin{bmatrix} w_1 \\ w_2 \\ 0 \end{bmatrix}$.

4. Problem 1.4.24.

5. Problem 1.4.23.