Math 469 HW #1
Due 1:00 PM Friday, Jan. 31

1. (Axler Problem 1.B.4) The empty set is not a vector space. It fails only one of the requirements listed in 1.19: which one?

2. (Axler Problem 1.C.15) Suppose U is a subspace of the vector space V. What is $U + U$?

3. (Axler Problem 1.C.20) Suppose

$$U = \{(x, x, y, y) \in \mathbb{F}^4 : x, y \in \mathbb{F}\}.$$

Find a subspace W of $\mathbb{F}^4$ so that $\mathbb{F}^4 = U \oplus W$.