HOMEWORK 3.
Due Monday, September 26, in class.

1. Let \( \mathcal{M} \) and \( \mathcal{N} \) be three dimensional subspaces of a five dimensional vector space. Prove or disprove: \( \mathcal{M} \) and \( \mathcal{N} \) have nontrivial intersection.

2. Do Problem 21 in Section 1.6.

3. Prove or disprove: A generating set is minimal if and only if it is independent.

4. If \( \mathbb{F} \) is a field with \( q \) elements, how many bases are there in \( \mathbb{F}^n \)?

5. Do Problem 31 in Section 2.1.