MAT312-AMS351
Applied Algebra
Homeworkset 6
Due Wednesday, November 13

1. Do problems 1, 2, 3, 4 from section 4.3.

2. Show that \( \mathbb{Z}_{10} \) is not a group under multiplication, but it is a group under addition.

3. Let \( n > 0 \) be an integer, and let \( \sigma, \tau \in S(n) \) be two permutations. If \( \sigma \) is the \( r \)-cycle \( \sigma = (i_1, i_2, \ldots, i_r) \), prove that \( \tau \sigma \tau^{-1} \) is also an \( r \)-cycle.

4. Prove that the set of all invertible \( n \times n \) matrices with complex coefficients \( \text{GL}(n, \mathbb{C}) \) is a group under multiplication.

5. Do Worksheet #4.