MATH 631
Allman

Homework Asssignment 10

Instructions: Read appropriately relevant sections of Chapter 5 in your textbook. Then read sections 7.1 - 7.3. Homework is due by the beginning of class on **Wednesday, November 4**.

1. Explicitly construct the unique non-Abelian group G of order 21 as a subgroup of an appropriately chosen symmetric group S_n.
2. Let p be a prime.
   (a) Consider the Abelian group $A = Z_{p^2}$. Find the automorphism group $\mathrm{Aut}(A)$ and its order. Justify your answer.
   (b) Consider the Abelian group $A = Z_p \times Z_p$. Find the automorphism group $\mathrm{Aut}(A)$ and its order. Justify your answer.
3. Let $p = 3$. Explicitly list all the subgroups of $Z_3 \times Z_3$ of order 3, and all subgroups of index 3.

§7.1: 5, 6, 7, 8, 11, 13, 14, 24, 25

§7.2: 6, 7, 8

§7.3: 1, 2

Wesley:	1,	§7.1: 5, 6, 7, 8, 11
Olha:	2a, 3,	§7.1: 13, 14, 24, 25
Oscar:	2b,	§7.2: 6, 7, 8 §7.3: 1, 2