Due: Dec 10 2024

- 1. (20 pts) What is the smallest positive integer n such that there are exactly four nonisomorphic Abelian groups of order n? Name the four groups.
- 2. (20 pts) Prove that any Abelian group of order 45 has an element of order 15. Does every Abelian group of order 45 have an element of order 9?
- 3. (20 pts) Suppose that G is an Abelian group of order 120 and that G has exactly three elements of order 2. Determine the isomorphism class of G.
- 4. (20 pts) The set {1,9,16,22,29,53,74,79,81} is a group under multiplication modulo 91. Determine the isomorphism class of this group.
- 5. (20 pts) Determine the isomorphism class of $(\mathbb{Z}_{16} \bigoplus \mathbb{Z}_{16})/\langle (2,2) \rangle$.