MATH 721, Algebra II
Exercises 8
Due Wed 25 Mar

Throughout this homework set, let G be a group.

Exercise 1. Let $Z(G)$ be the center of G. Assume that $G/Z(G)$ is cyclic. Prove that G is abelian.

Exercise 2. Let p be a prime integer, and assume that $|G| = p^2$. Prove that G is abelian.

Exercise 3. How many distinct isomorphism classes of abelian groups of order $2^3 3^2 5$ are there? Justify your answer.

Exercise 4. Let H be a subgroup of G such that $[G : H] = 2$. Prove that H is normal in G.