Homework Due May 5, 2008

Determine the conjugacy classes in the following groups and compute their character tables. I might do one of these in class, but write it up anyway.

Problem 1. Let G be the nonabelian group of order 55 with generators and relations:

$$G = \langle x, y | x^{11} = y^5 = 1, yxy^{-1} = x^4 \rangle$$

Problem 2. Let G be the nonabelian group of order 27:

$$G = \left\langle \left(\begin{array}{ccc} 1 & x & y \\ 0 & 1 & z \\ 0 & 0 & 1 \end{array} \right) \middle| \, x, y, z \in \mathbb{F}_3 \right\rangle.$$

Problem 3. Let G be the other nonabelian group of order 27:

$$G = \langle x, y | x^9 = y^3 = 1, yxy^{-1} = x^4 \rangle.$$

Problem 4. Let $G = \mathrm{SL}(2, \mathbb{F}_3)$, a group of order 24.