18.701 Problem Set 7 (corrected)

This assignment is due Wednesday October 31.

1. Chapter 6, Exercise M.4. (the hypercube)

2. Determine the class equation of $GL_3(F_2)$.
   (Oops. That isn’t Ex 2.15. Chapter 7, Exercise 2.15. Sorry about the error.)
   I suggest basing your analysis on the possible characteristic polynomials. Begin by finding nice matrices for each characteristic polynomial, but remember that the characteristic polynomial may not determine the conjugacy class.
   Note that the centralizer of a matrix $A$ is equal to the centralizer of $I + A$. This can be used in the analysis of matrices with characteristic polynomials $t^3 + t^2 + 1$ or $t^3 + t + 1$, which are more complicated than the others.

3. Chapter 7, Exercise 5.12. (the class equations of $S_6$ and $A_6$)