

MA535 Algebra
W. J. Martin
August 29, 2011

Assignment 1

DUE DATE: Thursday September 1, 2011, start of class.

Please carefully read the presentation rules below. The problem statements begin on the next page.

BASIC RULES FOR DR. MARTIN'S ASSIGNMENTS

- I) Each student must compose his/her assignments independently. However, rough work may be done in groups;
- II) Write legibly and use only one side of each sheet of paper; **Any paper submitted which is sloppy or uses two sides of a page will be returned immediately with no credit.**
- III) Show your work. Explain your answers using FULL SENTENCES;
- IV) Late assignments will not typically be accepted for credit.

Please complete the following six problems:

1. Build the Cayley table for the group of points on the elliptic curve

$$E : y^2 = x^3 + x + 4$$

over the field \mathbb{F}_7 of integers modulo seven. Explain your steps, make a diagram of the vector space, and clearly label the group elements on the graph of this curve.

2. Ex. 9 on p28.
3. Ex. 10 on p28.
4. Ex. 11 on p28.
5. Ex. 12 on p28.
6. Ex. 13 on p28.