

**Homework 6**

due May 25, 2005 in class

- (1) Artin 12.7.3 (pg. 488)
- (2) Artin 12.7.4 (pg. 488)
- (3) Artin 12.7.12 (pg. 488)
- (4) Artin 12.7.18 (pg. 488)
- (5) Artin 13.1.4 (pg. 530)
- (6) Artin 13.2.2 (pg. 530)
- (7) Prove that  $x^3 + x^2 + 1$  is irreducible in  $\mathbb{Z}/2\mathbb{Z}[x]$ . Use this polynomial to construct a field of order 8. What is the order of its multiplicative group? Describe the group explicitly.