

Homework 2

Due to 6pm, February 25, 2019

Problem 1. (15 points) Show that the factor $\mathbb{Z}_3[x]/\langle x^3 + 2x^2 + 1 \rangle$ is a field with 27 elements.

Problem 2. (15 points) Show that any finite extension of a field \mathbb{Z}_p has p^n elements. Use this to show, that the number of elements in any finite field is a power of a prime number.