

Assignment 9

Lecturer: Gil Cohen

Hand in date: January 8, 2015

Instructions: Please write your solutions in L^AT_EX / Word or exquisite handwriting. Submission can be done individually or in pairs.

Consider the function field $\mathbb{F}_4(x, y)/\mathbb{F}_4$ given by

$$y^3 = \frac{x^3}{x^2 + x + 1}.$$

1. Find all the rational places of this function field. Please use a diagram as shown in class, that describes which place is over which and what are the ramification indices and relative degree of the extensions.
2. What are the principal divisors of x and y ?