

MAT 148, Winter 2016

Homework Assignment 5

Due before the start of the class on Wednesday, February 17

Please read the sections 3.1-3.2 of the textbook before starting on the problem set.

Written Assignment (see p. 48-49):

1. Using the definition of a field, show that $a \cdot 0 = 0 \cdot a = 0$ for all elements a in a field.
4. Find the greatest common divisor of the following pairs of binary (that is, with coefficients in \mathbb{Z}_2) polynomials: (a) $x + 1$ and $x^3 + 1$; (b) $x + 1$ and $x^4 + 1$.
7. List all binary irreducible polynomials of degrees less than or equal to 5.
13. If $a(x)$ is a binary polynomial, prove that $(a(x))^2 = a(x^2) \pmod{2}$.

The homework must be legible, and written in connected sentences that explains what you are doing. Just the answer (whether correct or not) is not enough. Please put your name and section number on every page and staple the pages together. Homework should be handed in on time, late homework will not be graded.