

PREP 2

Reading. (BB) All of section 4.1. Be ready to summarize the main definitions and results. When taking notes on the reading, write one or two sentences about the key ideas in the proof of Theorem 4.1.9 and Corollary 4.1.12.

Exercises. Work out the following problems.

- (1) How many polynomials of degree 3 are there in $\mathbb{Z}_2[x]$?
- (2) How many polynomials of degree 11 are there in $\mathbb{Z}_5[x]$?
- (3) In the field \mathbb{Z}_5 , how many roots are there of the polynomial $f(x) = x^3 + 2x^2 + 4x - 2$?
- (4) For the field \mathbb{Z}_5 and the polynomial in problem 3, follow the procedure of Theorem 4.1.9 (as illustrated in Example 4.1.5) to write $f(x)$ in the form $q(x)(x - 2) + f(2)$.