

Computer Algebra (2012)-Aalborg University

Lecture 1, September 7th

Welcome to “Computer Algebra” for Mat5. We will follow the book: [GG] Joachim von zur Gathen, Jürgen Gerhard “Modern Computer Algebra”, 2nd Edition, Cambridge University Press, 2003. ISBN: 9780521826464.

You may find the information about the course, lecture sheets, exercises, etc, ... in Moodle and in the course’s webpage: <http://people.math.aau.dk/~diego/CompAlg2012.html>

Lauritzen’s book (from Algebra 1 and Algebra 2) can be a standard reference for algebraic concepts. Chapter 25 of [GG] is another reference.

The schedule for today is:

1st Lecture: Friday September 7th, 8:15-12:00 at room G5-110.

- 8:15-10:00 Lecture: Big-O notation. Representation and addition of numbers and polynomials. Multiplication and division with remainder. Euclidean domains and the extended Euclidean algorithm (pages 710–711, 27–39, 43–49).
- 10:00-12:00 Work in groups. Exercises from [GG]: 2.8, 2.9, A, 2.1, 2.7, B, C, 3.19 (some questions where answered in Algebra 2).

Exercise A: Implement Algorithm 2.3 in Maple. Represent a polynomial by its coefficients. Consider the polynomial ring over the rings \mathbb{Z} and $\mathbb{Z}/3\mathbb{Z}$.

Exercise B: Self-study section 2.1, Algorithm 2.4 and the analogue of algorithm 2.5 for integers (see pages 38 and 39).

Exercise C: Self-study Figures 2.1 and 2.2.

The teacher will not be present in approximately half of the lectures.

Best regards,

Diego