

Computer Algebra (2012)-Aalborg University

Lecture 18, November 5th

18th Lecture: Monday November 5th, 8:15-12:00 at room G5-109.

- 8:15-10:00 Lecture: Polynomial ideals, monomial orders and multivariate division with remainder, Monomial ideals and Hilbert's basis theorem (pages 581–594).
- 10:00-12:00 Work in groups. Exercises from [GG]: 21.6, 21.2, A, B, 21.8, 21.7, 21.9 (only i), C.

Exercise A: Let $R = \mathbb{F}_3[X, Y]$. Let $f = X^2Y + 2XY^2 + XY + X$, $f_1 = X + 2Y^2 + 1$, $f_2 = Y^2 + Y$. Divide f by $\{f_1, f_2\}$ considering the monomial order $<_{\text{lex}}$. Divide f by $\{f_1, f_2\}$ considering now the monomial order $<_{\text{grlex}}$.

Exercise B: Investigate how to define monomial orders in Maple and Sage.

Exercise C: Read examples 21.1, 21.2, 21.3.

Best regards,

Diego