

Algebra 2 (2012)-Aalborg University

Lecture 10, March 6th

10th Lecture (A): Tuesday March 6th, 8:15-12:00 at room G5-112.

- 8:15-8:45 Repetition from last lectures (pages 126–133).
- 8:45-10:45 Work in groups: Exercises from [Lau], 3.6 (page 138): 28, A, 29, 24, B, 23, C, D, 16, 13, 15, 8 (i and ii), 9, 10, 26, 24, 31.

Exercise A: Prove that $\mathbb{Z}[i]$ is a Euclidean domain (see pages 132 and 133).

Exercise B: Let R be an integral domain. Prove that for $a, b \in R$: $ab \in R^*$ if and only if $a, b \in R^*$.

Exercise C: Check that the relation defined in page 123 is an equivalent relation and the two operations are well defined.

Exercise D: Let R be a ring. Prove that R is a field if and only if $\langle 0 \rangle$ is a maximal ideal.

- 10:45-12:00 Lecture: Fermat's two-square theorem, The Euclidean algorithm strikes again, (pages 133–135)

Best regards,

Diego