



LUDWIG-
MAXIMILIANS-
UNIVERSITÄT
MÜNCHEN

MATHEMATISCHES INSTITUT



Prof. Dr. Fabien Morel
Laurenz Wiesenberger

TUTORIAL SHEET 11
ALGEBRA 2

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Exercise 1. Let k be a field. Compute the length of $k[X, Y]/(X^2, Y^2)$ as a $k[X, Y]$ -module.

Afterwards, I will discuss and give detailed solutions to Exercises 1 and 3 of Exercise Sheet 11.

Exercise 2. Assume that k^\times contains an element ζ of order 3. Let G be the group of automorphisms of $B = k[X]$, given by

$$\text{id}_B, \quad X \mapsto \zeta X, \quad X \mapsto \zeta^2 X.$$

Then we have $G \cong \mathbb{Z}/3\mathbb{Z}$.

Try to adapt Exercise 1 of Exercise Sheet 11 to this setting.