

EXAM FOR “ALGEBRAIC STRUCTURES” (6ALGS)
SUMMER SEMESTER 2024/2025

QUESTIONS SET NO. 6

1.

Give definition of a prime field. Illustrate this notion by examples.

2.

Is it true that if S is a subring of a ring R , then the additive group of S is a subgroup of an additive group of R ?

3.

Let $\lambda \in \mathbb{R}$, and M_λ is the set of all nonzero matrices of the form

$$\begin{pmatrix} x & y \\ \lambda y & x \end{pmatrix}$$

where $x, y \in \mathbb{R}$. For which values of λ , M_λ is:

a) a group

b) a simple group

with respect to the usual matrix multiplication?