

ALGEBRAIC STRUCTURES

SEMESTER B–PROBLEM SET 1

1. Consider the set

$$\mathbb{Z}[\sqrt{5}] = \{a + b\sqrt{5} \mid a, b \in \mathbb{Z}\}.$$

- (1) Show that $\mathbb{Z}[\sqrt{5}]$ is a subring of \mathbb{C} .
- (2) Is $\mathbb{Z}[\sqrt{5}]$ also a subfield of \mathbb{C} ?