CHAPTER 1, QUESTION 30

30. Prove that $\sqrt{10}$ is not a prime in $\mathbb{Z} + \mathbb{Z}\sqrt{10}$.

Solution. In $\mathbb{Z} + \mathbb{Z}\sqrt{10}$ we have

$$\sqrt{10} \mid 2 \cdot 5, \ \sqrt{10} \nmid 2, \ \sqrt{10} \nmid 5,$$

so that $\sqrt{10}$ is not a prime in $\mathbb{Z} + \mathbb{Z}\sqrt{10}$. ∎

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