

Chapter 3 (section 3.3)

Exercises covered : 1, 3, 4, 10

Hints

1. Use theorems 3.2 and 3.3.
3. Definition of unit : $\alpha \in \mathbb{Z}[\xi]$ is a unit if $\exists \beta \in \mathbb{Z}[\xi]$ such that $\alpha\beta = \beta\alpha = 1$.
For " \Leftarrow " use the fact that $\sigma_1 : K \rightarrow \mathbb{C}$ given by $\sigma_1(\alpha) = \alpha$ is one of the field monomorphisms.
4. Use an integral basis for $\mathbb{Z}[\xi]$ and the fact that $\xi = \frac{-1 + \sqrt{-3}}{2}$ and $\xi^2 = \frac{-1 - \sqrt{-3}}{2}$
10. Hints already given in the book.