



Frazer Jarvis

Algebraic Number Theory

Series: Springer Undergraduate Mathematics Series

- Provides a self-contained and easy-to-read introduction to algebraic number theory, with minimal algebraic prerequisites
- Introduces the theory of ideals in a historical context, through the study of the failure of unique factorisation in number fields
- Introduces the number field sieve at a level suitable for undergraduates

This undergraduate textbook provides an approachable and thorough introduction to the topic of algebraic number theory, taking the reader from unique factorisation in the integers through to the modern-day number field sieve. The first few chapters consider the importance of arithmetic in fields larger than the rational numbers. Whilst some results generalise well, the unique factorisation of the integers in these more general number fields often fail. Algebraic number theory aims to overcome this problem. Most examples are taken from quadratic fields, for which calculations are easy to perform. The middle section considers more general theory and results for number fields, and the book concludes with some topics which are more likely to be suitable for advanced students, namely, the analytic class number formula and the number field sieve. This is the first time that the number field sieve has been considered in a textbook at this level.

2014, XIII, 292 p. 3 illus.

Printed book

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17,99 € | £15.99 | \$29.99

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