Edmund Hlawka
Johannes Schoißengeier
Rudolf Taschner

Geometric and Analytic Number Theory

With 15 Figures

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Edmund Hlawka
Rudolf Taschner
Technische Universität Wien
Institut für Analysis, Technische Mathematik
und Versicherungsmathematik
Wiedner Hauptstraße 8-10/114
A-1040 Wien, Austria

Johannes Schoißengeier
Universität Wien
Institut für Mathematik
Strudlhofgasse 4
A-1090 Wien, Austria

Translator:

Charles Thomas
Department of Pure Mathematics
and Mathematical Statistics
University of Cambridge
16 Mill Lane
Cambridge CB2 1SB, Great Britain

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Preface to the English Edition

In the English edition, the chapter on the Geometry of Numbers has been enlarged to include the important findings of H. Lenstra; furthermore, tried and tested examples and exercises have been included.

The translator, Prof. Charles Thomas, has solved the difficult problem of transferring the German text into English in an admirable way. He deserves our unreserved praise and special thanks. Finally, we would like to express our gratitude to Springer-Verlag, for their commitment to the publication of this English edition, and for the special care taken in its production.

Vienna, March 1991

E. Hlawka
J. Schoißengeier
R. Taschner

Preface to the German Edition

We have set ourselves two aims with the present book on number theory. On the one hand for a reader who has studied elementary number theory, and who has knowledge of analytic geometry, differential and integral calculus, together with the elements of complex variable theory, we wish to introduce basic results from the areas of the geometry of numbers, diophantine approximation, prime number theory, and the asymptotic calculation of number theoretic functions. However on the other hand for the student who has already studied analytic number theory, we also present results and principles of proof, which until now have barely if at all appeared in text books. For example these include the proof of the irrationality of the Riemann zeta function at the number 3, Newman's application of complex variable theory to the prime number theorem, and Hecke's prime number theorem for the Gaussian integers.

For the choice of material we have been able to rely on lectures held since 1948 in Vienna and since 1967 in Pasadena, but have still had to overcome a number of presentational problems. We thank our fellow workers, colleagues and friends, who stood ready to help us. Our particular thanks go to the publishers Manz and to Dr. Franz Stein for his interest, his suggestions and his patience.

Vienna, Advent 1985

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