

Preface

The present lecture notes originate from an introductory course delivered at the Scuola Normale in Pisa during the academic year 2006/2007. Basically, they were addressed especially to a public of graduate students. Dr. Marco Illengo took some notes of the course, providing much help and good motivation for writing this book.

Also in view of the origin of these notes from a course addressed to a relatively wide audience, we have tried to be self-contained and detailed; generally speaking, the prerequisites do not go beyond basic mathematical material. A knowledge of the basic theory of algebraic numbers is useful, especially from Chapter 3 onwards. In some of the supplements and in Chapter 4 a little knowledge of algebraic geometry is required.

The proofs of the theorems usually follow well-known lines, but occasionally some variations are introduced. A few theorems are stated but not proved here, which is indicated with a star. All of the chapters contain several exercises; they are not listed at the end, but appear along the text. Sometimes they consist of known (or new) facts whose complete proofs have not been included for brevity. In part for this reason, we have almost always provided hints for the solutions: this is not because we distrust the reader's skill, but rather has the purpose of keeping the whole almost self-contained and of giving the choice of whether spending any time in seeking a solution or read it directly.

We have borrowed freely from other sources, like Mordell's *Diophantine equations* and especially the recent book by Bombieri and Gubler, *Heights in diophantine geometry*, an invaluable source.

The chapters are concluded with "Notes", of bibliographical and historical content. To limit the (already large) number of references, sometimes we have not given exact data for the original papers, but rather referred to some book containing fully detailed references.

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I have borrowed freely from several sources, but in particular the book [25] by Enrico Bombieri and Walter Gubler has been an invaluable reference on many occasions; I wish to thank the authors for this. I further thank David Masser, who among other things provided me with some of his unpublished notes in the context of Thue's theorem, and Pietro Corvaja for helpful remarks.

I thank Francesco Amoroso for writing the appendix to the book, which is an updated reference for the subtlest recent results in the quantification of the lower bounds for heights treated in Chapter 4. This also gives a sketch of the delicate methods.

Finally, I thank the “Centro Edizioni” of the Scuola Normale, especially Luisa Ferrini, for her precious help in the actual publication of the volume.