Preface

This book has essentially two objectives. One of them is to give you the basic notions of the theory of automatic theorem proving, which was developed in the last third of the 20th century, and apply this theory to examples. The second objective is to show the interesting topics of elementary geometry which the author met in the course of years.

The content of this book consists of six mutually independent stories, which are aimed at a certain theme. Each of these stories was thoroughly studied by the author in the past and an attempt is now made to put together all these themes. Each problem is firstly solved by the method of automatic theorem proving, whereas in the second step the problem is solved classically – without using computer (of course, if it is possible).

The author's aim is to acquaint the reader with new computer methods of proving, deriving and discovery of theorems as well as to make him/her think about the inner beauty of classical solutions and about some less known results.

A correspondence between varieties and ideals enables us to pass between geometry and algebra. This gives us a big power. Given a problem, we can decide whether to solve it classically using the geometric properties of a variety or by means of the tools of computer algebra with the use of the theory of automated theorem proving.

The book is suitable for those who are interested in geometry or algebra, in classical solutions or automated theorem proving and elimination of variables. It is accessible to undergraduate and graduate students yet of interest to experts.

I am indebted to many people who helped me in the course of work on the book. I am especially grateful to Tomas Recio (Univ. of Cantabria in Santander) for encouragement and help. I also wish to thank Dongming

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