Preface

Differential geometry is the study of curves, surfaces, and higher-dimensional objects by using techniques from linear algebra and calculus. But still, average knowledge of linear algebra and (multivariable) calculus is sufficient so that readers can follow the results of this book.

Once we decided to write this book, we wanted to organize it in a different format from the many books that already exist in the literature on differential geometry. In view of the fact that a mathematical subject can only be learned through much practice rather than reading directly, we based the book on examples, exercises, and problems. In this sense, we give around 300 advanced practical problems, which are placed at the end of each chapter. Although complete solutions to these problems are provided in the book, we encourage the reader to solve them with his or her own efforts. Just in case they require to check the solutions, readers should consult our solutions. Furthermore, the book contains over 45 illustrations that provide the opportunity to better visualize the theoretical concepts.

The book, however, addresses many notable classical results such as Lancret, Shell, Joachimsthal, and Meusnier theorems, as well as the fundamental theorems of plane curves, space curves, surfaces, and manifolds.

We hope that the format of the present book will contribute to the reader's knowledge of differential geometry.