

This book provides a self-contained and rigorous introduction to calculus of functions of one variable. The presentation and sequencing of topics emphasizes the structural development of calculus. At the same time, due importance is given to computational techniques and applications. The authors have strived to make a distinction between the intrinsic definition of a geometric notion and its analytic characterization. Throughout the book, the authors highlight the fact that calculus provides a firm foundation to several concepts and results that are generally encountered in high school and accepted on faith. For example, one can find here a proof of the classical result that the ratio of the circumference of a circle to its diameter is the same for all circles. Also, this book helps students get a clear understanding of the concept of an angle and the definitions of the logarithmic, exponential, and trigonometric functions, together with a proof of the fact that these are not algebraic functions. A number of topics that may have been inadequately covered in calculus courses and glossed over in real analysis courses are treated here in considerable detail. As such, this book provides a unified exposition of calculus and real analysis.



The only prerequisites for reading this book are topics that are normally covered in high school; however, the reader is expected to possess some mathematical maturity and an ability to understand and appreciate proofs. This book can be used as a textbook for a serious undergraduate course in calculus, while parts of the book can be used for advanced undergraduate and graduate courses in real analysis. Each chapter contains several examples and a large selection of exercises, as well as "Notes and Comments" describing salient features of the exposition, related developments, and references to relevant literature.



A COURSE IN CALCULUS AND REAL ANALYSIS

