Preface

The material of the present thesis is based on the research conducted since February 2021 at The Maharaja Sayajirao University of Baroda, Vadodara, on "Study of rational Fourier series," carried out under the guidance and supervision of Professor R. G. Vyas, Professor of Mathematics in the Department of Mathematics, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara—390002.

The present thesis comprises five chapters. Chapter 1 provides a brief introduction to the subject area of the thesis, along with recent developments in the field. Chapter 2 presents results related to the order of rational Fourier coefficients, while Chapter 3 contains results related to the order of double and multiple rational Fourier coefficients. The content of Chapters 2 and 3 is published in the form of three papers: the first one in Periodica Mathematica Hungarica (2022), 85(2), 264–274; the second one in Georgian Mathematical Journal (2023), 30(2), 247–253; and the third one in Publicationes Mathematicae Debrecen (2023), 103(3–4), 473-487. Chapter 4 encompasses results related to the rate of convergence of rational and double rational Fourier series for functions of generalized bounded variation. The content of this chapter is published in two papers: the first one in Acta et Commentationes Universitatis Tartuensis de Mathematica (ACUTM) (2022), 26(2), 233–241, and the second one is published in Complex Analysis and Operator Theory. Finally, Chapter 5 contains results related to the convergence and integrability of rational and double rational trigonometric series. The content of this chapter is published in the form of a paper in Georgian Mathematical Journal (2023), 30(5), 739–744.