Contents

		Introduction	ix
Chapter	1	Riemann's Theory of Integration	3
	1.1	THE EIGHTEENTH-CENTURY CONCEPTION OF A FUNCTION AND TRIGONOMETRIC SERIES REPRESENTATIONS, 3	
	12	CAUCHY'S CONCEPTION OF THE INTEGRAL, 9	
		DIRICHLET'S CONTRIBUTION, 12	
		RIEMANN, 16	
Chapter	2	The Development of Riemann's Ideas: 1870–80	21
	2.1	TRIGONOMETRIC SERIES AND TERM-BY-TERM IN-	
		TEGRATION, 21	
	2.2	THE REFORMULATION OF RIEMANN'S INTEGRA- BILITY CRITERIA, 28	
	2.3	DISCUSSIONS OF THE DIFFERENTIABILITY PROPERTIES OF CONTINUOUS FUNCTIONS, 42	
Chapter	3	Set Theory and the Theory of Integration	55
	3.1	Nowhere Dense Sets and their Measure-	
	0.0	THEORETIC PROPERTIES, 55	
		THE INTRODUCTION OF OUTER CONTENT, 61 CANTOR'S DEVELOPMENT OF THE THEORY OF SETS	
	ა.ა	AND ITS APPLICATION TO THE THEORY OF INTE- GRATION, 71	
	3.4	CURVE LENGTH AND THE INTEGRAL, 79	
	• • •		

Chapter	4	The End of the Century: A Period of Transition	86
	4.1	THE INTRODUCTION OF THE CONCEPT OF MEASURABILITY, 86	
	4.2	Borel's Theory of Measure, 97	
	4.3	Schoenflies' Report on the Theory of Sets, 106	
	4.4	RESEARCHES ON TERM-BY-TERM INTEGRATION OF NONUNIFORMLY CONVERGING SERIES, 110	
Chapter	5	The Creation of Modern Integration Theory	120
	5.1 5.2	LEBESGUE'S THEORY OF INTEGRATION, 120 THE WORK OF VITALI AND YOUNG ON MEASURE AND INTEGRATION, 146	
	5.3	FUBINI'S THEOREM, 154	
Chapter	6	Pioneering Applications of the Lebesgue Integral	163
Epilogue		The Lebesgue-Stieltjes Integral	179
Appendi	x	Dini's Theorem on the Differentiability of Continuous Functions	197
		Glossary	200
		Special Symbols	204
		List of Abbreviations	205
		·	200
		Bibliography	208
		Index	225