CONTENTS 5

	8.7	Exercises	157
	8.8	L'Hôpital's Rule	159
		8.8.1 Interest Compounded Continuously	163
	8.9	Exercises	164
	8.10	Multiplication of Power Series	165
	8.11	Exercises	167
	8.12	The Fundamental Theorem of Algebra	169
	8.13	Some Other Theorems	171
9	Inte	egration	175
	9.1	The Integral of 1700's	175
	9.2	The Riemann Stieltjes Integral	179
	9.3	Fundamental Definitions and Properties	180
	9.4	The Fundamental Theorem of Calculus	193
	9.5	Uniform Convergence and the Integral	194
	9.6	A Simple Procedure for Finding Integrals	195
	9.7	Stirling's Formula	196
	9.8	Fubini's Theorem an Introduction	199
	9.9	Geometric Length of a Curve in $\mathbb{R}^p$	202
	9.10	Exercises	203
10	Imp	proper Integrals	213
	10.1	The Dirichlet Integral	215
	10.2	The Riemann Lebesgue Lemma and Convergence	218
	10.3	The Gamma Function	222
	10.4	Laplace Transforms	223
	10.5	Exercises	228
11	Fun	ctions of One Complex Variable	<b>231</b>
11	11.1	Contour Integrals	231
11	11.1		
11	11.1 11.2 11.3	Contour Integrals	231
11	11.1 11.2 11.3 11.4	Contour Integrals	231 237 242 243
11	11.1 11.2 11.3 11.4 11.5	Contour Integrals	231 237 242
11	11.1 11.2 11.3 11.4 11.5	Contour Integrals	231 237 242 243
	11.1 11.2 11.3 11.4 11.5 11.6 Seri	Contour Integrals	231 237 242 243 250 253 <b>259</b>
	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1	Contour Integrals	231 237 242 243 250 253
	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2	Contour Integrals	231 237 242 243 250 253 <b>259</b> 261
	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3	Contour Integrals	231 237 242 243 250 253 <b>259</b> 261 264
	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3 12.4	Contour Integrals Cauchy Goursat, Cauchy Integral Theorem The Logarithm The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions	231 237 242 243 250 253 <b>259</b> 261 264 266
	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3 12.4 12.5	Contour Integrals	231 237 242 243 250 253 <b>259</b> 261 264 266 267
	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3 12.4 12.5 12.6	Contour Integrals Cauchy Goursat, Cauchy Integral Theorem The Logarithm The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions Uniform Approximation with Trig. Polynomials Mean Square Approximation	231 237 242 243 250 253 <b>259</b> 261 264 266 267 269
	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3 12.4 12.5 12.6 12.7	Contour Integrals Cauchy Goursat, Cauchy Integral Theorem The Logarithm The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions Uniform Approximation with Trig. Polynomials Mean Square Approximation Exercises	231 237 242 243 250 253 259 261 264 266 267 269 271
	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3 12.4 12.5 12.6 12.7 12.8	Contour Integrals Cauchy Goursat, Cauchy Integral Theorem The Logarithm The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions Uniform Approximation with Trig. Polynomials Mean Square Approximation Exercises The Fourier Transform	231 237 242 243 250 253 259 261 264 266 267 269 271 273
	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3 12.4 12.5 12.6 12.7 12.8	Contour Integrals Cauchy Goursat, Cauchy Integral Theorem The Logarithm The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions Uniform Approximation with Trig. Polynomials Mean Square Approximation Exercises	231 237 242 243 250 253 259 261 264 266 267 269 271
	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3 12.4 12.5 12.6 12.7 12.8 12.9	Contour Integrals Cauchy Goursat, Cauchy Integral Theorem The Logarithm The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions Uniform Approximation with Trig. Polynomials Mean Square Approximation Exercises The Fourier Transform	231 237 242 243 250 253 259 261 264 266 267 269 271 273
12	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3 12.4 12.5 12.6 12.7 12.8 12.9 12.10	Contour Integrals Cauchy Goursat, Cauchy Integral Theorem The Logarithm The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions Uniform Approximation with Trig. Polynomials Mean Square Approximation Exercises The Fourier Transform The Inversion of Laplace Transforms OExercises  Generalized Riemann Integral	231 237 242 243 250 253 <b>259</b> 261 264 266 267 271 273 276 278
12	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3 12.4 12.5 12.6 12.7 12.8 12.9 12.10 <b>The</b>	Contour Integrals . Cauchy Goursat, Cauchy Integral Theorem The Logarithm . The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series . Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions Uniform Approximation with Trig. Polynomials Mean Square Approximation Exercises The Fourier Transform The Inversion of Laplace Transforms DExercises  Generalized Riemann Integral Definitions and Basic Properties	231 237 242 243 250 253 259 261 264 267 269 271 273 276 278 281
12	11.1 11.2 11.3 11.4 11.5 11.6 <b>Seri</b> 12.1 12.2 12.3 12.4 12.5 12.6 12.7 12.8 12.9 12.10 <b>The</b> 13.1 13.2	Contour Integrals Cauchy Goursat, Cauchy Integral Theorem The Logarithm The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions Uniform Approximation with Trig. Polynomials Mean Square Approximation Exercises The Fourier Transform The Inversion of Laplace Transforms DExercises  Generalized Riemann Integral Definitions and Basic Properties Monotone Convergence Theorem	231 237 242 243 250 253 259 261 264 266 267 271 273 276 278 281 281 289
12	11.1 11.2 11.3 11.4 11.5 11.6 Seri 12.1 12.2 12.3 12.4 12.5 12.6 12.7 12.8 12.9 12.10 The 13.1 13.2 13.3	Contour Integrals Cauchy Goursat, Cauchy Integral Theorem The Logarithm The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions Uniform Approximation with Trig. Polynomials Mean Square Approximation Exercises The Fourier Transform The Inversion of Laplace Transforms DExercises  Generalized Riemann Integral Definitions and Basic Properties Monotone Convergence Theorem Computing Generalized Integrals	231 237 242 243 250 253 259 261 264 266 267 273 276 278 281 281 289 291
12	11.1 11.2 11.3 11.4 11.5 11.6 Seri 12.1 12.2 12.3 12.4 12.5 12.6 12.7 12.8 12.9 12.10 The 13.1 13.2 13.3 13.4	Contour Integrals Cauchy Goursat, Cauchy Integral Theorem The Logarithm The Method of Residues Counting Zeros, Open Mapping Theorem Exercises  es and Transforms Fourier Series Criteria for Convergence Integrating and Differentiating Fourier Series Ways of Approximating Functions Uniform Approximation with Trig. Polynomials Mean Square Approximation Exercises The Fourier Transform The Inversion of Laplace Transforms DExercises  Generalized Riemann Integral Definitions and Basic Properties Monotone Convergence Theorem	231 237 242 243 250 253 259 261 264 266 267 271 273 276 278 281 281 289