

TABLE OF CONTENTS

Preface	1
CHAPTER I. FOURIER TRANSFORMS IN L_1 (One Variable)	
§1. Elementary properties	1
§2. Riemann Lebesgue Lemma	3
§3. Convolution of two functions	5
§4. Derivatives of a function and its transform	7
§5. Inversion formula	10
§6. Uniqueness of Fourier transform	11
§7. Summability theorems	13
§8. Some applications of summability-theorems	19
§9. Continuity in norm	22
§10. Summability in norm	25
§11. Derivatives of a function and their transform	26
§12. Degree of approximation	30
§13. Abel's theorem	34
§14. Abel and Gauss summability	37
§15. Boundary values	40
§16. Mean values	47
§17. Tauberian theorems	50

TABLE OF CONTENTS

CHAPTER II. FOURIER TRANSFORMS IN L_1, (Several Variables)	
§1. Riemann Lebesgue Lemma; Composition:,	
Convolution	57
§2. Uniqueness theorem	59
§3. Gauss summability formula.	61
§4. Gauss summability theorem	64
§5. Application of summability-theorem . . .	65
§6. Norms, Continuity, Parseval relations .	67
§7. Radial functions	67
§8. General summability for radial functions	76
CHAPTER III. L_p-SPACES	
§1. Metric spaces	80
§2. Completion of a metric space	81
§3. Banach spaces.	85
§4. Linear operations.	87
§5. L_p spaces.	94
§6. Continuity, summability and approximation in L_p norm.	98
CHAPTER IV. FOURIER TRANSFORMS IN L_2.	
§1. Transformations in Hilbert space	104
§2. Plancherel's theorem	105
§3. General summability	113
§4. Several variables.	117
§5. Radial functions	121
§6. Derivatives and their transforms	123
§7. Boundary values	132
§8. Simple type of bounded transformation. .	138

TABLE OF CONTENTS

§9. Bounded transformations commutative with translations	142
§10. Closure of translations.	148
CHAPTER V. GENERAL TRANSFORMS IN L_2	
§1. General unitary transformations in L_2 $(0, \infty)$	150
§2. Watson transforms.	156
§3. Functional equation associated with Wat- son transform.	159
CHAPTER VI. GENERAL TAUBERIAN THEOREMS	
§1. Introduction	171
§2. Preliminary lemmas	175
§3. Tauberian theorems; Averages on $(-\infty, \infty)$	182
§4. Averages on $(0, \infty)$	195
§5. Special cases.	199
NOTES	209