

CONTENTS

INTRODUCTION	ix
STANDARD FORMS	xv

FOURIER TRANSFORMS

1

CHAPTER I

FOURIER COSINE TRANSFORMS

1.1. General formulas	7
1.2. Algebraic functions	7
1.3. Powers with arbitrary index	10
1.4. Exponential functions	14
1.5. Logarithmic functions	17
1.6. Trigonometric functions of argument kx	18
1.7. Trigonometric functions of other arguments	23
1.8. Inverse trigonometric functions	29
1.9. Hyperbolic functions	30
1.10. Orthogonal polynomials	38
1.11. Gamma function (including incomplete gamma function) and related functions; Legendre function	39
1.12. Bessel functions of argument kx	43
1.13. Bessel functions of other arguments	51
1.14. Other higher transcendental functions	60

CHAPTER II

FOURIER SINE TRANSFORMS

2.1. General formulas	63
2.2. Algebraic functions	64
2.3. Powers with arbitrary index	68
2.4. Exponential functions	72
2.5. Logarithmic functions	76

2.6.	Trigonometric functions of argument kx	78
2.7.	Trigonometric functions of other arguments	82
2.8.	Inverse trigonometric functions	87
2.9.	Hyperbolic functions	88
2.10.	Orthogonal polynomials	94
2.11.	Gamma functions (including incomplete gamma function) and related functions; Legendre function	96
2.12.	Bessel functions of argument kx	99
2.13.	Bessel functions of other arguments	108
2.14.	Other higher transcendental functions	115

CHAPTER III
EXPONENTIAL FOURIER TRANSFORMS

3.1.	General formulas	117
3.2.	Elementary functions	118
3.3.	Higher transcendental functions	122

LAPLACE TRANSFORMS 125

CHAPTER IV
LAPLACE TRANSFORMS

4.1.	General formulas	129
4.2.	Algebraic functions	133
4.3.	Powers with an arbitrary index	137
4.4.	Step-, jump-, and other sectionally rational functions .	141
4.5.	Exponential functions	143
4.6.	Logarithmic functions	148
4.7.	Trigonometric functions	150
4.8.	Inverse trigonometric functions	160
4.9.	Hyperbolic functions	162
4.10.	Inverse hyperbolic functions	167
4.11.	Orthogonal polynomials	170
4.12.	Gamma function, error function, exponential integral and related functions	176
4.13.	Legendre functions	179
4.14.	Bessel functions of arguments kt and $kt^{\frac{1}{2}}$	182
4.15.	Bessel functions of other arguments	190

4.16.	Modified Bessel functions of arguments kt and $kt^{\frac{1}{2}}$	195
4.17.	Modified Bessel functions of other arguments	199
4.18.	Kelvin's functions and related functions	203
4.19.	Functions related to Bessel functions, Struve, Lommel and Bessel integral functions	205
4.20.	Parabolic cylinder functions	210
4.21.	Gauss' hypergeometric functions	212
4.22.	Confluent hypergeometric functions	214
4.23.	Generalized hypergeometric series	217
4.24.	Hypergeometric functions of several variables	222
4.25.	Elliptic functions.	224
4.26.	Miscellaneous functions	225

CHAPTER V

INVERSE LAPLACE TRANSFORMS

5.1.	General formulas	227
5.2.	Rational functions	229
5.3.	Irrational algebraic functions	233
5.4.	Powers with an arbitrary index	238
5.5.	Exponential functions of arguments p and $1/p$	241
5.6.	Exponential functions of other arguments	245
5.7.	Logarithmic functions	250
5.8.	Trigonometric functions	253
5.9.	Hyperbolic functions	255
5.10.	Orthogonal polynomials	259
5.11.	Gamma function, incomplete gamma functions, zeta function and related functions	261
5.12.	Error function, exponential integral and related functions	265
5.13.	Legendre functions	270
5.14.	Bessel functions	272
5.15.	Modified Bessel functions of arguments kp and kp^2 . .	276
5.16.	Modified Bessel functions of other arguments	279
5.17.	Functions related to Bessel functions	286
5.18.	Parabolic cylinder functions	289
5.19.	Gauss' hypergeometric function	291
5.20.	Confluent hypergeometric functions	293
5.21.	Generalized hypergeometric functions	297
5.22.	Elliptic functions and theta functions	299

MELLIN TRANSFORMS

303

CHAPTER VI

MELLIN TRANSFORMS

6.1.	General formulas	307
6.2.	Algebraic functions and powers with arbitrary index . .	308
6.3.	Exponential functions	312
6.4.	Logarithmic functions	314
6.5.	Trigonometric and inverse trigonometric functions . .	317
6.6.	Hyperbolic and inverse hyperbolic functions	322
6.7.	Orthogonal polynomials, gamma functions, Legendre functions and related functions	324
6.8.	Bessel functions and related functions	326
6.9.	Other higher transcendental functions	336

CHAPTER VII

INVERSE MELLIN TRANSFORMS

7.1.	Algebraic functions and powers with arbitrary index . .	341
7.2.	Other elementary functions	344
7.3.	Gamma function and related functions; Riemann's zeta function	347
7.4.	Bessel functions	356
7.5.	Other higher transcendental functions	362

APPENDIX

Notations and definitions of higher transcendental functions	367
INDEX OF NOTATIONS	389

