

Table of Contents

I.	Approximation to Irrational Numbers by Rationals.	
1.	Dirichlet's Theorem.	1
2.	Farey Series	2
3.	Continued Fractions: Algebraic Theory.	7
4.	Simple Continued Fractions	11
5.	Continued Fractions and Approximation to Irrationals by Rationals	16
6.	Further results.	23
II.	Simultaneous Approximation.	
1.	Dirichlet's Theorem on Simultaneous Approximation.	27
2.	Theorems of Blichfeldt and Minkowski	29
3.	Improvement of the Simultaneous Approximation Constants.	36
4.	Badly Approximable Systems of Linear Forms	41
III.	Games and Measures.	
	First Part: Games	
1.	The (α, β) - Game.	48
2.	Badly Approximable n -tuples and (α, β) - Games.	52
	Second Part: Measures	
3.	Statement of Results	60
4.	The convergence part of Theorem 3A	63
5.	The idea of the proof of Theorem 3B.	63
6.	On certain intervals	65
7.	Sums involving a function $\Psi(k, q)$	66
8.	Bounds for certain integrals	69

9. Proof of Theorem 3B.	74
10. The case $n \geq 2$	77

IV. Integer Points in Parallelepipeds.

1. Minkowski's Theorem on Successive Minima	80
2. Jordan's Theorem	87
3. Davenport's Lemma.	89
4. Reciprocal Parallelepipeds	92
5. Khintchine's Transference Principle.	95
6. The Grassman Algebra	102
7. Mähler's Theory of Compound Sets	108
8. Point Lattices	111

V. Roth's Theorem.

1. Liouville's Theorem.	114
2. Roth's Theorem and its History	115
3. Thue's Equation.	118
4. Combinatorial Lemmas	121
5. Further auxiliary Lemmas	125
6. The Index of a Polynomial.	129
7. The Index Theorem.	132
8. The Index of $P(X_1, \dots, X_m)$ at Rational Points near $(\alpha, \alpha, \dots, \alpha)$	134
9. Generalized Wronskians	137
10. Roth's Lemma	141
11. Conclusion of the proof of Roth's Theorem.	148

VI. Simultaneous Approximation to Algebraic Numbers.

1. Basic Results.	151
---------------------------	-----

2. Roth Systems.	155
3. The Strong Subspace Theorem	162
4. The Index of a Polynomial	166
5. Some Auxiliary Lemmas	172
6. The Index Theorem	176
7. The Polynomial Theorem.	180
8. Grids	183
9. The Index of P with respect to certain Rational Linear Forms	187
10. An Analogue of Roth's Lemma	190
11. The size of \underline{g}_n^*	195
12. The Next to Last Minimum.	197
13. The Constancy of \underline{g}_n^*	200
14. The Last Two Minima	202
15. Proof of the Strong Subspace Theorem.	205

VII. Norm Form Equations.

1. Norm Form Equations	208
2. Full Modules.	212
3. An Example.	213
4. The General Case.	215
5. Induction on the rank of \mathfrak{M}	219
6. Linear Inequalities in a Simplex.	221
7. Constuction of a field L	223
8. The Main Lemma.	228
9. Proof of the Main Theorem	234
10. Equations $\mathfrak{N}(M(\underline{x})) = P(\underline{x})$	236

11. Another Theorem on Linear Forms	240
12. Proof of the Theorem on Linear Forms	242
13. Proof of Theorem 10A	247
14. Proof of Theorem 10C	248

VIII. Approximation By Algebraic Numbers

1. The Setting	251
2. Field Height and Approximation by Elements of a Given Number Field	252
3. Absolute Height and Approximation by Algebraic Numbers of Bounded Degree	255
4. Approximation by Quadratic Irrationals	260
5. Approximation by Quadratic Irrationals, Continued	264
6. Proof of Wirsing's Theorem	268
7. A Subspace Theorem for Number Fields	272
8. Approximation to Algebraic Numbers by Elements of a Number Field	275
9. Approximation to Algebraic Numbers by Algebraic Numbers of Bounded Degree	278
10. Mahler's Classification of Transcendental Numbers	280
11. A Theorem of Mignotte	281
References	289