

Contents

I	Power Series	1
1	Series of Real and Complex Numbers	1
2	Power Series	3
3	Rückert's and Weierstrass's Theorems	11
II	Analytic Rings and Formal Rings	16
1	Mather's Preparation Theorem	16
2	Noether's Projection Lemma	21
3	Abhyankar's and Rückert's Parametrization	26
4	Nagata's Jacobian Criteria	31
5	Complexification	39
III	Normalization	45
1	Integral Closures	45
2	Normalization	49
3	Multiplicity in Dimension 1	53
4	Newton-Puiseux's Theorem	58
IV	Nullstellensätze	64
1	Zero Sets and Zero Ideals	64
2	Rückert's Complex Nullstellensatz	68
3	The Homomorphism Theorem	73
4	Risler's Real Nullstellensatz	78
5	Hilbert's 17th Problem	81
V	Approximation Theory	87
1	Tougeron's Implicit Functions Theorem	87
2	Equivalence of Power Series	90
3	M. Artin's Approximation Theorem	94
4	Formal Completion of Analytic Rings	99
5	Nash Rings	106
VI	Local Algebraic Rings	110
1	Local Algebraic Rings	110
2	Chevalley's Theorem	112
3	Zariski's Main Theorem	115
4	Normalization and Completion	120
5	Efroymson's Theorem	125
	Bibliographical Note	130
	Index	133