

Contents

Preface	v
Introduction: Set Theory	1
1. Introduction and Notation	1
2. Mappings	3
3. Well-Ordered Sets	6
4. Ordinal Numbers	8
5. Cardinal Numbers	11
Notes	14
I Basic Concepts	15
1. Algebras and Relational Systems	15
2. Homomorphisms	20
3. Congruence Relations	24
4. Subalgebras	28
5. Direct Products	32
6. Closure Properties of Classes of Algebras	36
Problems	38
Notes	41
2 Subdirect Decompositions	42
1. Subdirect Decompositions	42
2. Lattices	44
3. The Subdirect Decomposition Theorem	50
4. Applications	52
Problems	56
Notes	64

3	Direct Decompositions	65
	1. Interdirect Decompositions	65
	2. Independence in Modular Lattices	70
	3. Finite Dimensional Modular Lattices	75
	4. Ore's Theorem	78
	Problems	84
	Notes	97
4	Free Algebras	98
	1. Free Extensions	98
	2. Free Sums	103
	3. Injective Completeness	107
	Problems	111
	Notes	117
5	Varieties of Algebras	119
	1. Word Algebras	119
	2. Birkhoff's Theorem	124
	3. The Generation of Varieties	128
	Problems	132
	Notes	139
	Bibliography	141
	Symbols	145
	Index	147