

Contents

Preface to the Second Edition	ix
Updated Preface to the First Edition	xi
Basic Notation	xv
1 Walks in Graphs	1
2 Cubes and the Radon Transform	11
3 Random Walks	21
4 The Sperner Property	31
5 Group Actions on Boolean Algebras	43
6 Young Diagrams and q-Binomial Coefficients	57
7 Enumeration Under Group Action	75
8 A Glimpse of Young Tableaux	103
9 The Matrix-Tree Theorem	135
10 Eulerian Digraphs and Oriented Trees	151
11 Cycles, Bonds, and Electrical Networks	163
11.1 The Cycle Space and Bond Space	163
11.2 Bases for the Cycle Space and Bond Space	168
11.3 Electrical Networks	172
11.4 Planar Graphs (Sketch).....	177
11.5 Squaring the Square	180
12 A Glimpse of Combinatorial Commutative Algebra	187
12.1 Simplicial Complexes	187
12.2 The Face Ring	201

13	Miscellaneous Gems of Algebraic Combinatorics	219
13.1	The 100 Prisoners	219
13.2	Oddtown	221
13.3	Complete Bipartite Partitions of K_n	222
13.4	The Nonuniform Fisher Inequality	223
13.5	Odd Neighborhood Covers	225
13.6	Circulant Hadamard Matrices	226
13.7	P -Recursive Functions	232
13.8	Affine Monoids	235
	Hints and Comments for Some Exercises	245
	Bibliography	251
	Index	257