

# Contents

<i>Preface</i>	ix
<b>1 Foundations</b>	1
1.1 Propositional logic	1
1.2 Set theory	9
1.3 Numbers	19
1.4 Complex numbers	37
1.5 Functions	52
<b>2 Linear Algebra</b>	73
2.1 Vectors	73
2.2 Matrices	90
2.3 Systems of linear equations	105
2.4 The solution of systems of linear equations	121
2.5 Determinants	141
<b>3 Calculus</b>	160
3.1 Sequences	160
3.2 Series	173
3.3 Continuous real functions	196
3.4 Differentiation	214
3.5 Integration	235
<b>4 Probability</b>	260
4.1 Introduction	260
4.2 Conditional probability. Multi-step experiments	271
4.3 Independent trials. Discrete probability distributions	287
4.4 Continuous probability distributions	306
4.5 Independent random variables	320
4.6 Computer sampling	333
<b>5 Algebraic Structures</b>	343
5.1 Relations	343
5.2 Digraphs	355

5.3 Groups and semigroups	368
5.4 Rings, fields and vector spaces	377
5.5 Boolean algebras	390
<i>References</i>	406
<i>Solutions to Selected Exercises</i>	407
<i>Index</i>	419