

Table of Contents

| | |
|--|------------|
| Chapter 1: Real Numbers | 1 |
| Section 1: Natural Numbers and Integers..... | 2 |
| Section 2: Rational Numbers | 8 |
| Section 3: Real Numbers..... | 17 |
| Section 4: Counting..... | 26 |
| Section 5: Infinities..... | 34 |
| Chapter 2: Complex Numbers | 37 |
| Section 1: Introduction to Complex Numbers..... | 38 |
| Section 2: More Operations on Complex Numbers | 45 |
| Section 3: Polar Form: Introduction | 53 |
| Section 4: Converting to Polar Form..... | 61 |
| Section 5: Multiplication and Division in Polar Form | 69 |
| Section 6: Exponentiation and Roots | 75 |
| Chapter 3: Beyond Complex | 82 |
| Section 1: Quaternions..... | 83 |
| Section 2: Quaternion Multiplication and Reciprocals | 90 |
| Section 3: Linear Equations in the Quaternions | 98 |
| Section 4: Infinitesimals..... | 105 |
| Section 5: Smaller and Bigger | 111 |
| Answers to Odd-numbered Exercises | 118 |