

CONTENTS

| | |
|------------------------------------------------|-----|
| Preface | ix |
| 1. Introduction | 1 |
| 2. Basic Concepts | 13 |
| 2.1. Relations and Graphs..... | 14 |
| 2.2. Orders on Vectors..... | 16 |
| 2.3. Program Model..... | 20 |
| 3. Dependence | 27 |
| 3.1. Dependence Concepts..... | 28 |
| 3.2. The Dependence Problem..... | 36 |
| 4. Bounds of Linear Functions | 45 |
| 4.1. Introduction..... | 45 |
| 4.2. Bounds in Rectangles..... | 50 |
| 4.3. Bounds in Trapezoids..... | 55 |
| 5. Linear Diophantine Equations | 67 |
| 5.1. Introduction..... | 67 |
| 5.2. Greatest Common Divisors..... | 68 |
| 5.3. Single Equation in Two Variables..... | 71 |
| 5.4. Single Equation in Many Variables..... | 76 |
| 5.5. Systems of Equations..... | 85 |
| Appendix to Chapter 5..... | 93 |
| 6. Dependence Tests | 101 |
| 6.1. Introduction..... | 101 |
| 6.2. One-Dimensional Arrays, Single Loops..... | 102 |
| 6.3. One-Dimensional Arrays..... | 111 |
| 6.4. General Case..... | 134 |
| 6.5. Miscellaneous Comments..... | 142 |
| References | 149 |
| Index | 153 |