

Contents

| | | |
|----|---|-----|
| 1 | Preface | 1 |
| 2 | Completing the square and quadratic equations | 2 |
| 3 | Factorizations and algebraic identities | 14 |
| 4 | Factoring expressions involving $a - b, b - c, c - a$ | 27 |
| 5 | Factoring $a^3 + b^3 + c^3 - 3abc$ | 36 |
| 6 | AM-GM and Hölder's inequality | 40 |
| 7 | Lagrange's identity and the Cauchy-Schwarz inequality | 52 |
| 8 | Making linear combinations | 65 |
| 9 | Fixed points and monotonicity | 77 |
| 10 | The floor function | 83 |
| 11 | Taking advantage of symmetry | 95 |
| 12 | Introductory problems | 111 |
| 13 | Advanced problems | 117 |
| 14 | Solutions to introductory problems | 123 |
| 15 | Solutions to advanced problems | 157 |
| 16 | Other Books from XYZ Press | 200 |