Contents

Foreword
   Waring’s problem, by R. C. Vaughan vii
   Forms in many variables, by D. R. Heath-Brown xi
   Diophantine inequalities, by D. E. Freeman xv

Editorial preface xix

1 Introduction 1
2 Waring’s problem: history 3
3 Weyl’s inequality and Hua’s inequality 7
4 Waring’s problem: the asymptotic formula 15
5 Waring’s problem: the singular series 24
6 The singular series continued 33
7 The equation $c_1 x_1^{k_1} + \cdots + c_s x_s^{k_s} = N$ 39
8 The equation $c_1 x_1^{k_1} + \cdots + c_s x_s^{k_s} = 0$ 45
9 Waring’s problem: the number $G(k)$ 51
10 The equation $c_1 x_1^{k_1} + \cdots + c_s x_s^{k_s} = 0$ again 63
11 General homogeneous equations: Birch’s theorem 67
12 The geometry of numbers 75
13 Cubic forms 85
14 Cubic forms: bilinear equations 92
15 Cubic forms: minor arcs and major arcs 99
16 Cubic forms: the singular integral 104
17 Cubic forms: the singular series 107
18 Cubic forms: the $p$-adic problem 111
### Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Homogeneous equations of higher degree</td>
<td>120</td>
</tr>
<tr>
<td>20</td>
<td>A Diophantine inequality</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>References</td>
<td>134</td>
</tr>
<tr>
<td></td>
<td>Index</td>
<td>139</td>
</tr>
</tbody>
</table>