CONTENTS

1. Introduction 1
2. The Spirit of Mathematics 6
3. Infinity 13
4. How Steep is a Curve? 20
5. Differentiation 25
6. Greatest and Least 32
7. Playing with Infinity 38
8. Area and Volume 45
9. Infinite Series 54
10. 'Too Much Delight' 60
11. Dynamics 64
12. Newton and Planetary Motion 70
13. Leibniz's Paper of 1684 78
14. 'An Enigma' 87
15. Who Invented Calculus? 93
16. Round in Circles 100
17. Pi and the Odd Numbers 106
18. Calculus under Attack 112
19. Differential Equations 118
20. Calculus and the Electric Guitar 125
21. The Best of all Possible Worlds? 132
22. The Mysterious Number e 139
23. How to Make a Series 144

24. Calculus with Imaginary Numbers 149
25. Infinity Bites Back 154
26. What *is* a Limit, Exactly? 162
27. The Equations of Nature 167
28. From Calculus to Chaos 174

Further Reading 183
References for Quotations 185
Picture Credits 187
Index 189