

Positive Solutions of Differential, Difference and Integral Equations

by

Ravi P. Agarwal

*Department of Mathematics,
National University of Singapore,
Singapore*

Donal O'Regan

*Department of Mathematics,
National University of Ireland,
Galway, Ireland*

and

Patricia J. Y. Wong

*Division of Mathematics,
Nanyang Technological University,
Singapore*



KLUWER ACADEMIC PUBLISHERS

DORDRECHT / BOSTON / LONDON

Contents

Preface

ix

Ordinary Differential Equations

1. First Order Initial Value Problems	1
2. Second Order Initial Value Problems	11
3. Positone Boundary Value Problems	19
4. Semi-positone Boundary Value Problems	29
5. Semi-infinite Interval Problems	40
6. Mixed Boundary Value Problems	47
7. Singular Boundary Value Problems	63
8. General Singular and Nonsingular Boundary Value Problems	86
9. Quasilinear Boundary Value Problems	106
10. Delay Boundary Value Problems	110
11. Coupled System of Boundary Value Problems	119
12. Higher Order Sturm-Liouville Boundary Value Problems	131
13. (n, p) Boundary Value Problems	190
14. Focal Boundary Value Problems	210
15. General Focal Boundary Value Problems	222
16. Conjugate Boundary Value Problems	236

Difference Equations

17. Discrete Second Order Boundary Value Problems	261
18. Discrete Higher Order Sturm-Liouville Boundary Value Problems	279
19. Discrete (n, p) Boundary Value Problems	315
20. Discrete Focal Boundary Value Problems	325
21. Discrete Conjugate Boundary Value Problems	353

Integral and Integrodifferential Equations

22. Volterra Integral Equations	370
23. Hammerstein Integral Equations	381
24. First Order Integrodifferential Equations	386

References	395
Authors Index	412
Subject Index	417