

# Contents

<i>Preface</i>	<i>iii</i>
<i>Contributors</i>	<i>ix</i>
On 2-Layer Free-Boundary Problems with Generalized Joining Conditions: Convexity and Successive Approximation of Solutions <i>A. Acker</i>	1
Nonisothermal Semiconductor Systems <i>W. Allegretto and H. Xie</i>	17
A Model for the Growth of the Subpopulation of Lawyers <i>John V. Baxley and Peter A. Cummings</i>	25
Differential Inequalities and Existence Theory for Differential, Integral, and Delay Equations <i>T. A. Burton</i>	35
Monotone Iterative Algorithms for Coupled Systems of Nonlinear Parabolic Boundary Value Problems <i>Ying Chen and Xinzhi Liu</i>	57
Steady State Bifurcation Hypersurfaces of Chemical Mechanisms <i>Bruce L. Clarke</i>	67
Stability Problems for Volterra Functional Differential Equations <i>C. Corduneanu</i>	87
Persistence (Permanence), Compressivity, and Practical Persistence in Some Reaction–Diffusion Models from Ecology <i>Chris Cosner</i>	101
Perturbing Vector Lyapunov Functions and Applications to Large–Scale Dynamic Systems <i>Zahia Drici</i>	117

On the Existence of Multiple Positive Solutions of Nonlinear Boundary Value Problems <i>L. H. Erbe and Shouchuan Hu</i>	127
Gradient and Gauss Curvature Bounds for $H$ -Graphs <i>Robert Finn</i>	137
Some Applications of Geometric Methods in Mechanics <i>Zhong Ge and W. F. Shadwick</i>	151
Comparison of Even-Order Elliptic Equations <i>Velmer B. Headley</i>	159
Positive Equilibria and Convergence in Subhomogeneous Monotone Dynamics <i>Morris W. Hirsch</i>	169
Blowup of Solution for the Heat Equation with a Nonlinear Boundary Condition <i>Bei Hu and Hong-Min Yin</i>	189
On the Existence of Extremal Solutions for Impulsive Differential Equations with Variable Time <i>Saroop Kaul</i>	199
Global Asymptotic Stability of Competitive Neural Networks <i>Semen Koksal</i>	203
A Graph Theoretical Approach to Monotonicity with Respect to Initial Conditions <i>H. Kunze and D. Siegel</i>	207
On the Stabilization of Uncertain Differential Systems <i>A. B. Kurzhanski</i>	217
Comparison Principle for Impulsive Differential Equations with Variable Times <i>V. Lakshmikantham</i>	227
The Relationship Between the Boundary Behavior of and the Comparison Principles Satisfied by Approximate Solutions of Elliptic Dirichlet Problems <i>Kirk E. Lancaster</i>	237
Numerical Solutions for Linear Integro-Differential Equations of Parabolic Type with Weakly Singular Kernels <i>Yanping Lin</i>	261
Impulsive Stabilization <i>Xinzhi Liu and Allan R. Willms</i>	269

<b>Contents</b>	<b>vii</b>
Comparison Methods and Stability Analysis of Reaction Diffusion Systems <i>C. V. Pao</i>	277
Some Applications of the Maximum Principle to a Free Stekloff Eigenvalue Problem and to Spatial Gradient Decay Estimates <i>G. A. Philippin</i>	293
Comparison Methods in Control Theory <i>Emilio O. Roxin</i>	303
The Self-Destruction of the Perfect Democracy <i>Rudolf Starkermann</i>	309
A Nonlinear Stochastic Process for Quality Growth <i>Chris P. Tsokos</i>	319
An Extension of the Method of Quasilinearization for Reaction-Diffusion Equations <i>A. S. Vatsala</i>	331
Geometric Methods in Population Dynamics <i>M. L. Zeeman</i>	339
Uniform Asymptotic Stability in Functional Differential Equations with Infinite Delay <i>Bo Zhang</i>	349
<i>Index</i>	363