

# CONTENTS

<i>Preface</i>	vii
<b>Chapter 1. First Concerns</b>	<b>1</b>
1. Examples of Singular Perturbation Problems	1
2. Asymptotic Expansions	12
3. Intuitive Approach of Matched Asymptotic Expansions	15
4. Two-Variable Expansions	22
<b>Chapter 2. The Regular Perturbation Method</b>	<b>27</b>
<b>Chapter 3. Linear Boundary Value Problems</b>	<b>35</b>
1. Second-Order Problems	35
2. Higher-Order Problems	45
3. Generalizations of These Results	59
<b>Chapter 4. Nonlinear Initial Value Problems</b>	<b>76</b>
1. The Basic Problem	76
2. Two-Parameter Problems	94
3. Differential-Difference Equations with Small Delay	102
<b>Chapter 5. Nonlinear Boundary Value Problems</b>	<b>115</b>
1. Some Second-Order Scalar Problems	115
2. Second-Order Quasi-Linear Equations	119
3. Quasi-Linear Systems	125
4. An Extended Discussion of a Nonlinear Example	134

<b>Chapter 6. The Singularly Perturbed Linear State Regulator Problem</b>	139
<b>Chapter 7. Boundary Value Problems with Multiple Solutions Arising in Chemical Reactor Theory</b>	157
<b>Chapter 8. Some Turning Point Problems</b>	168
1. A Simple Problem	168
2. A Uniform Reduction Theorem	178
3. The Boundary Value Problem	184
<b>References</b>	190
<i>Index</i>	203