

# CONTENTS

<b>1</b>	<b>Introduction to RPN</b>	<b>1</b>
1.1	Introduction to RPN: History, 2	
1.2	Pushing and Popping; Exchanging and Rolling, 3	
1.3	Introduction to RPN Calculating, 6	
1.3.1	Key to Keys, 6	
1.3.2	Functors and Flags, 29	
1.3.3	Translating into RPN, 31	
1.3.4	Errors and Error Propagation, 34	
1.4	Why RPN? 37	
1.5	Exercises, 41	
<b>2</b>	<b>Terser and Tighter Algorithms</b>	<b>43</b>
2.1	The Algorithm Method, 43	
2.2	What Is a Good Algorithm? 44	
2.3	Examples of Writing Algorithms, 46	
2.3.1	Normal or Gaussian Probability Function, 46	
2.3.2	Coordinate Translation and Rotation, 47	
2.4	Polynomials, Power Series, and Continued Fractions, 54	
2.5	Stack Rearrangements, 60	
2.6	Algebraic Manipulations in RPN, 87	
2.7	Exercises, 95	
<b>3</b>	<b>Iterative Solutions of Elementary Transcendental Equations</b>	<b>100</b>
3.1	Introduction, 100	
3.2	The $g$ Method, 102	
3.3	The $\alpha$ Method, 105	
3.4	The $\beta$ Method, 107	

3.5	Example: $x = Ax^{-x}$ , 108	
3.6	Example: Interest Rate for an Annuity, 114	
3.7	Exercises, 119	
<b>4</b>	<b>Curve Fitting</b>	<b>122</b>
4.1	Introduction: Least Squares, 122	
4.2	Linear Problems, 123	
4.3	An Approach to Certain Nonlinear Problems, 128	
4.4	Exercises, 132	
<b>5</b>	<b>Numerical Integration, Differentiation, and Interpolation</b>	<b>135</b>
5.1	Introduction, 136	
5.2	Tabular Interpolation, 138	
5.3	Tabular Differentiation, 140	
5.4	Tabular Quadrature, 141	
5.5	Gaussian Quadrature, 143	
5.6	Indefinite Quadrature and Differential Equations, 144	
5.7	Exercises, 153	
<b>6</b>	<b>Suggestions for Future Developments</b>	<b>156</b>
6.1	General Suggestions, 157	
6.2	0, $U$ , and $\infty$ , 161	
6.2.1	$\infty$ Is a Number, 161	
6.2.2	And So Is $U$ , 161	
6.3	El Cheapo, Model A, 163	
6.4	The Model B, 167	
6.5	A Plotter! 170	
6.6	Exercises, 171	
	<b>Appendix A: Algorithms</b>	<b>173</b>
	<b>Appendix B: Answers to Exercises</b>	<b>293</b>
	<b>Appendix C: References and Bibliography</b>	<b>315</b>
	<b>Index</b>	<b>319</b>