

Preface to the Second Edition

The second edition has greatly benefited from a sizable number of comments and suggestions I received from users of the first edition. I hope that I have corrected all the errors and misprints in the book. Important revisions were made in Chapters 1 and 4. In Chapter 1, I added two appendices (Global Stability and Periodic Solutions). In Chapter 4, I added a section on applications to mathematical biology. Influenced by a friendly and some not so friendly comments about Chapter 8 (previously Chapter 7: Asymptotic Behavior of Difference Equations), I rewrote the chapter with additional material on Birkhoff's theory. Also, due to popular demand, a new chapter (Chapter 9) under the title "Applications to Continued Fractions and Orthogonal Polynomials" has been added. This chapter gives a rather thorough presentation of continued fractions and orthogonal polynomials and their intimate connection to second-order difference equations. Chapter 8 (Oscillation Theory) has now become Chapter 7. Accordingly, the new revised suggestions for using the text are as follows.

The book may be used with considerable flexibility. For a one-semester course, one may choose one of the following options:

- (i) If you want a course that emphasizes stability and control, then you may select Chapters 1, 2, and 3, and parts of Chapters 4, 5, and 6. This is perhaps appropriate for a class populated by mathematics, physics, and engineering majors.
- (ii) If the focus is on the applications of difference equations to orthogonal polynomials and continued fractions, then you may select Chapters 1, 2, 3, 8, and 9.

I am indebted to K. Janglajew, who used the book several times and caught numerous glitches and typos. I am very grateful to Julio Lopez and his students, who helped me correct some mistakes and improve the exposition in Chapters 7 and 8. I am thankful to Raghil Abu-Saris, who caught some errors and typos in Chapter 4. My thanks go to Gerry Ladas, who assisted in refining Chapter 8, and to Allan Peterson, who graciously used my book and caught some mistakes in Chapter 4. I thank my brother Hatem Elaydi who read thoroughly Chapter 6 and made valuable revisions in the exercises. Many thanks to Fozi Dannan, whose comments improved Chapters 1, 4, and 9. Ronald Mickens was always there for me when I needed support, encouragement, and advice. His impact on this edition is immeasurable. My special thanks to Jenny Wolkowicki of Springer-Verlag.

I apologize in advance to all those whom I did not mention here but who have helped in one way or another to enhance the quality of this edition.

It is my pleasure to thank my former secretary, Constance Garcia, who typed the new and revised material.

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