

## Preface

"Difference equation" redirects here. It is not to be confused with differential equation or Difference Equations: From Rabbits to Chaos. In mathematics, a recurrence relation is an equation that recursively defines a sequence or multidimensional array of values, once one or more initial terms are given; each further term of the sequence or array is defined as a function of the preceding terms. The term difference equation sometimes (and for the purposes of this article) refers to a specific type of recurrence relation. However, "difference equation" is frequently used to refer to any recurrence relation.<sup>1</sup>

In the present book, fifteen typical literatures about difference equations published on international authoritative journals were selected to introduce the worldwide newest progress, which contains reviews or original researches on Hilfer Fractional Boundary Value Problems, Partial Delay Differential Equation,  $\phi$ -Caputo, Nonlinear Difference Equations, q-difference Equations, *ect.* We hope this book can demonstrate advances in difference equations as well as give references to the researchers, students and other related people.

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<sup>1</sup> From Wikipedia:[https://en.wikipedia.org/wiki/Recurrence\\_relation](https://en.wikipedia.org/wiki/Recurrence_relation)