

Abstract

Difference Equations have not always been treated with the importance they are given today. It has taken the emergence of the digital computer to show their true worth and great importance in present day Mathematics.

This work is broadly structured as follows.

Chapter one deals with some prerequisites for the development of the topic, such as the concept of succession, the recurrence relation and recursive algorithms. Compound interest rates and the number of moves in the Hanói Tower puzzle are instances that use recursive algorithms.

Difference equations can be divided into two major groups: linear and nonlinear. Chapter two concerns linear difference equations, both homogeneous and non-homogeneous, and describes various methods to resolve them.

The fixed point theory is tackled in Chapter three, and solutions of difference equations are determined graphically, using the Cobweb method. This method is the basis for the study of nonlinear difference equations.

The field of nonlinear difference equations is immense, and Chapter four examines the logistic difference equation.

Finally, examples are given of the many applications of difference equations, and a wide variety of areas such as Mathematics (naturally), Economics, war strategy, Physics and the study of population change.