

This thesis uses knowledge from the introductory course of complex analysis, especially the theory of Laurent series. It provides basic information about the Z transformation and shows its mathematical applications.

The text gives characterizations of exponential type sequences and defines their Z transformation. Presented theorems can be used to determine images of exponential type sequences and to find preimages of functions holomorphic at the point infinity. These theorems are given with proofs and illustrated with examples. Also some methods of the inverse transformation are mentioned and a list of preimages of chosen rational functions holomorphic at infinity is included. In the last chapter the Z transformation is applied to solve linear difference equations.