On discrete GB-splines

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Abstract

Explicit formulae and recurrence relations are obtained for discrete generalized B-splines (discrete GB-splines for short). Properties of discrete GB-splines and their series are studied. It is shown that the series of discrete GB-splines is a variation diminishing function and the systems of discrete GB-splines are weak Chebyshev systems.

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1 Introduction

The tools of generalized splines and GB-splines are widely used in solving problems of shape-preserving approximation (e.g., see [7]). Recently, in [1] a difference method for constructing shape-preserving hyperbolic tension splines as solutions of multipoint boundary value problems was developed. Such an approach permits us to avoid the computation of hyperbolic func-