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Asymptotic behaviour of iterates of positive linear operators

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Abstract

We investigate the iterates of positive linear operators on $C[0, 1]$ which preserve the linear functions, and the asymptotic behaviour of the associated semigroup. The general results are applied to the Bernstein-Schnabl operators on the unit interval.

Keywords: Positive linear operators, iterates, C_0 - semigroup, asymptotic behaviour.

MSC: Primary 41A36; Secondary 47D06.

§1. Introduction

In the theory of approximation by positive linear operators the iterates of the operators play a significant role. In particular, the asymptotic behaviour of the iterates was investigated by using a variety of techniques; see, e.g., [1, 2], [4]-[10] and the references therein. On the other hand, F. Altomare and his school investigated the approximation of certain strongly continuous semigroups in terms of suitable iterates of positive linear operators; see [2, 3, 4, 10] and the references given there. The results were used in order to describe qualitative properties and the asymptotic behaviour of the semigroups.

The present paper is devoted to problems of this kind. In Section 2 we study the limit of L^m (as $m \rightarrow +\infty$), where L is a positive linear operator on $C[0, 1]$ preserving

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