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Bernstein-Schnabl operators on noncompact real intervals

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Abstract

We study the Bernstein-Schnabl operators associated with a continuous selection of probability Borel measure on a noncompact real interval in the framework of weighted spaces of continuous functions.

We investigate their approximation properties and, in addition, we prove that their iterates converge to a positive C_0 -semigroup whose generator is a differential operator of the form $Au := \alpha u''$. A converse problem on the half line is also discussed.

Keywords: Borel measure, weighted continuous function space, positive approximation process, asymptotic formula, degenerate differential operator, C_0 -semigroup, approximation of semigroup.

MSC: Primary 41A36, 47D06, 35K15; Secondary 35A35, 47B65, 47D07.

§1. Introduction

In this paper, developing some ideas outlined in [13] (see also [11, Section 6] and [22]), we deepen the study of Bernstein-Schnabl operators associated with a continuous selection

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