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On Simultaneous Approximation by a Linear Combination of a New Sequence of Linear Positive Operators

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Abstract: In [1] we introduced a new sequence of linear positive operators M_n to approximate unbounded continuous functions of exponential growth on [0,\infty). As this sequence is saturated with $O(n^{-1})$, to accelerate the rate of convergence we applied the technique of linear combination introduced by May [3] and Rathore et al. [4] to these operators. The object of the present paper is to study the phenomena of simultaneous approximation (approximation of derivatives of functions by the corresponding order derivatives of operators) by the linear combination M_n (. , k, x) of M_n. First, we establish a Voronovskaja-type asymptotic formula and then proceed to obtain an estimate of error in terms of modulus of continuity in simultaneous approximation by this sequence of operators.

Key Words: Simultaneous approximation, Linear positive operators, Linear combination, Voronovskaja-type asymptotic formula, Modulus of continuity

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