Results on non-multiplicative operators

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A current subject in Approximation Theory is the approximation of functions by positive linear operators. Usually, two types of positive approximation processes are used – the discrete respectively continuous form. In the first case, various classes of operators are expressed by series. In this talk we are interested in these last sequences, denoted generically by $(L_n)_{n\geq 1}$. We assume that the following relation

$$L_n e_0 = e_0, \ n \in \mathbb{N},$$

occurs.

In recent years, it was studied the behavior of the expression

$$L_n(fg, x) - L_n(f, x)L_n(g, x) \tag{1}$$

for given functions f, g belonging to the domain of L_n and x fixed and compatible with the domain of the functions.

In what follows we deal with the following two aspects.

Among the properties studied for linear approximation processes, the asymptotic behavior known as the so called Voronovskaja type formula plays an important role. Knowing a such Voronovskaja formula verified by L_n, we establish the asymptotic behavior of quantity defined by (1). Particular cases are shown.

We also present a Chebyshev-Grüss-type inequality involving linear operators without supposing that they are positive. Also, we indicate sufficient conditions that ensure the statistical convergence of the expression given by (1).

References

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