RECONSTRUCTION OF TWO APPROXIMATION PROCESSES 
IN ORDER TO REPRODUCE $e^{ax}$ AND $e^{2ax}$, $a > 0$

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Abstract. We propose two modifications for Gauss-Weierstrass operators and moment-type operators which fix $e^{ax}$ and $e^{2ax}$ with $a > 0$. First, we present moment identities for new operators. Then, we discuss weighted approximation and prove Voronovskaya-type theorems for them in exponentially weighted spaces. Using modulus of continuity in exponentially weighted spaces, we obtain some global smoothness preservation properties. We give a comparison result for Gauss-Weierstrass operators. Finally, we provide some graphical illustrations that show that modified operators perform better than classical ones.

Keywords and phrases: Gauss-Weierstrass operators, moment-type operators, Voronovskaya-type theorem, weighted approximation.

REFERENCES