New Subclasses of Bi-Univalent Functions Defined By (p, q)-Derivative Operator Subordinate to Lucas-Balancing Polynomials

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Abstract

Our current study is primarily driven by the abundance of fascinating and productive applications for a broad class of special polynomials. One such special polynomial is the Lucas-balancing polynomials, which have recently been examined in geometric function theory. This paper's main goal is to introduce and study two subclasses of analytic and bi-univalent functions defined by the (p, q)-derivative operator subordinate to Lucas-Balancing polynomials. We obtain the estimates for function coefficients $|d_2|$ and $|d_3|$ of the newly created classes. We also estimate the Fekete-Szegö problem $|d_2 - \mu d_2^3|$, $\mu \in \mathbb{R}$ for functions in these classes. We also present a number of findings from our research and draw attention to relevant connections with earlier findings. 2020 MSC: 30C45, 33C45; 11B39.

Keywords

Bi-univalent, (p, q)-derivative operator, Subordination, Lucas-Balancing polynomials, Fekete-Szegö functional.