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ON BAZILEVIC FUNCTIONS OF COMPLEX ORDER

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ABSTRACT

Let $\alpha > 0$ and $b \neq 0$ a complex number. Then a function $f \epsilon B(\alpha, b)$ if it is analytic in the unit disc E and $Re\{1 + \frac{1}{b}[\frac{zf'(z)f^{\alpha-1}(z)}{g^{\alpha}(z)} - 1]\} > 0$, for some starlike function $g, z \epsilon E$. The class $B_1(\alpha, b)$ is defined by taking $g(z) = z$ in the same way. We call these functions as Bazilevic functions of complex order b and type α. Arc length coefficient and some other results are solved for these classes.

1. INTRODUCTION

Let S denote the class of all analytic functions f which are univalent in the unit disc $E = \{z : |z| < 1\}$ and normalized by the conditions $f(0) = 0, f'(0) = 1$. Let K and S^* be the usual subclasses of S consisting of functions which are, respectively, close-to-convex and starlike (w.r. to the origin) in E. Let P denote the class of functions p which are analytic in E and satisfy the conditions $p(0) = 1$ and $Re\, p(z) > 0$ in E.

We define the following.

Definition 1.1

Let $\alpha > 0$ and $b \neq 0$ (complex). Let f be analytic in E and be given by

$$f(z) = z + \sum_{n=2}^{\infty} a_n z^n. \qquad (1.1)$$

Then we say that

(i) $f \epsilon B(\alpha, b)$ if

$$\left\{1 + \frac{1}{b}\left[\frac{zf'(z)f^{\alpha-1}(z)}{g^{\alpha}(z)} - 1\right]\right\} \epsilon P,$$

for some $g \epsilon S^*, z \epsilon E$,

and