HADAMARD PRODUCTS IN THE CLASSES OF K-UNIFORMLY CONVEX FUNCTIONS

Agnieszka WIŚNIOWSKA, Politechnika Rzeszowska

Let A be the class of functions analytic in the unit disk U and normalized by $f(0) = f'(0) - 1 = 0$. For $0 \leq k < \infty$ define the class $k - UCV$ of k-uniformly convex functions to be the set of functions $f \in A$ with the property that

$$\mathrm{Re}\left\{1 + \frac{zf''(z)}{f'(z)}\right\} > k\left|\frac{zf''(z)}{f'(z)}\right|, \quad z \in U.$$

In particular cases, for $k = 0$ we obtain the well known class of convex univalent functions, and for $k = 1$ – the class of uniformly convex functions due to Goodman in 1991.

The concept of k-uniform convexity was introduced by S. Kanas and A. Wiśniowska in 1997. The classes $k - UCV$ have a natural geometric interpretation in the sense that $f \in k - UCV$ if and only if the image of every circular arc in U with center ζ, where $|\zeta| \leq k$, is convex.

In this paper some convolution results for the classes $k - UCV$ are given. Moreover certain properties concerning integral operators and neighbourhoods of k-uniformly convex functions are studied.