

On the univalence of derivatives of functions which are univalent in angular domains

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Abstract

We consider functions f that are univalent in a plane angular domain of angle $\alpha\pi$, $0 < \alpha \leq 2$. It is proved that there exists a natural number k depending only on α such that the k th derivatives $f^{(k)}$ of these functions cannot be univalent in this angle. We find the least of the possible values of k . As a consequence, we obtain an answer to the question posed by Kir'yatskii: if f is univalent in the half-plane, then its fourth derivative cannot be univalent in this half-plane. © 2007 Pleiades Publishing, Ltd.

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Keywords

Bieberbach's conjecture, Holomorphic function, Koebe function, Univalent function, Weierstrass theorem