

661.30009

Koepf, Wolfram

Convex functions and the Nehari univalence criterion. (English)
Complex analysis, Proc. 13th Rolf Nevanlinna-Colloq., Joensuu/Finl. 1987,
Lect. Notes Math. 1351, 214-218 (1988).

[For the entire collection see Zbl 645.00003.]

It is well known that for functions f which are univalently convex in the open unit disc D , the Schwarzian derivative $S_f(z)$ satisfies

$$(1) \quad (1 - |z|^2)^2 |S_f(z)| \leq 2 \quad \text{for } z \in D.$$

The author describes the geometric nature of the image domain $f(D)$ if f is extremal with reference to the inequality (1). For example he proves that if equality in (1) holds then $f(D)$ is a parallel strip or is unbounded and such that $\partial f(D)$ has an angle $\alpha = 0$ at ∞ and vice-versa.

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Keywords : Schwarzian derivative

Citations : Zbl 645.00003

Classification:

- 30C45 Special classes of univalent and multivalent functions