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On the Coefficients of Quasiconformality for Convex Functions

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Abstract

Let f be holomorpic and univalent in the unit disc E and f(E) be convex. We consider the conformal radius R = R(D,z) = {pipe;} f′(ζ){pipe;}(1-ζ) of D = f(E) at the point z = f(ζ). In [3] and [4] the coefficient kf(r), r ∈ (0,1), of quasiconformality has been defined by the equation, In this paper the authors computed the quantity kf(r) for some convex functions. These examples led them to the conjecture that kf (r) ≤ r2 for any convex function holomorphic in E. The function f(ζ) = log((1 + ζ)/(1 -ζ)), which was among their examples, shows that this bound is sharp for any r∈ (0,1). In the present article, we will prove that the above conjecture is true and that the the above example is essentially the only one for which equality is attained. © 2010 Pleiades Publishing, Ltd.

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Keywords

Coefficient of quasiconformality, Conformal radius, Convex functions