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On the Fekete-Szegoe problem for close-to-convex functions. (English)

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Fekete-Szegoe were first to prove that $\max_{f\in S}|a_3-\lambda a_2^2|=1+2\exp[-2\lambda(1-\lambda)], \lambda\in[0,1]$. In this paper the author solves the similar question for the class of close-to-convex functions. In particular: $||a_3|-|a_2||\le 1$ for the class of close-to-convex functions, while the result for the class S is $\max_s ||a_3|-|a_2||=1.029...$ Among other means, the author uses the following result of the present author [Coefficients of symmetric functions of bounded boundary rotation (to appear)]. Lemma 1. Let f be a close to convex normalized function in the unit disc. Then h defined by

$$h'(z)=[f'(z^2)]^{1/2},\quad h(0)=0,$$

is an odd close-to-convex function of order 1/2.

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Keywords : Fekete-Szegoe problem; close-to-convex functions

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Classification:

- 30C45 Special classes of univalent and multivalent functions
- 30C50 Coefficient problems for univalent and multivalent functions
- 30C70 Extremal problems for (quasi-)conformal mappings, variat. methods