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On the Maximum Modulus of Polynomials. II

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Abstract:

Let $f(z) := \sum_{\nu=0}^{n} a_\nu z^\nu$ be a polynomial of degree n having no zeros in the open unit disc, and suppose that $\max_{|z|=1} |f(z)| = 1$. How small can $\max_{|z|=\rho} |f(z)|$ be for any $\rho \in [0, 1)$? This problem was considered and solved by Rivlin [4]. There are reasons to consider the same problem under the additional assumption that $f'(0) = 0$. This was initiated by Govil [2] and followed up by the present author [3]. The exact answer is known when the degree n is even. Here, we make some observations about the case where n is odd.