

# ON CAUCHY'S TYPE BOUND FOR ZEROS OF A POLYNOMIAL\*

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Dedicated to Dr. Vasile Drăgan on the occasion of his 70<sup>th</sup> anniversary

## Abstract

Let  $p(z)$  be a polynomial of degree  $n$  with real or complex coefficients. Using the Lacunary type polynomial, Gugenheimer generalized the Cauchy bound concerning the moduli of zeros of a polynomial  $p(z)$ . Jain further improved the Gugenheimer bound. In the present paper an attempt to investigate and extend the previous results were made. In many cases we found that the new bounds are much better than some of the other well-known bounds.

MSC: 30C15, 30C10, 26C10.

**keywords:** Zeros, Cauchy bound, circular region, Lacunary type polynomial.

## 1 Introduction and statement of results

The problem of computing the bounds of polynomial zeros has a long history. In recent years, numerous papers (see [1, 3, 4, 7, 9, 10, 12, 15, 16]) and comprehensive books (see also [8, 11]) have been published to determine the circular region for estimating the bounds of polynomial zeros with real or

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