Some results concerning rate of growth of polynomials. (English summary)


The main result proved here is the following: if \( p(z) = a_0 + \sum_{\nu=t}^{n} a_{\nu} z^\nu, \ t \geq 1, \) is a polynomial of degree \( n \geq 2, \) \( p(z) \neq 0 \) for \( |z| < K, \ K \geq 1, \) and if \( M(p, R) = \max_{|z|=R} |p(z)|, \ m = \min_{|z|=K} |p(z)|, \) then for \( R \geq 1, \)

\[
M(p, R) \leq \left( \frac{R^n + s_0}{1 + s_0} \right) \|p\| - \left( \frac{R^n - 1}{1 + s_0} \right) m - \left( \frac{R^{n-1} - 1}{n-2} \right) \|p'(0)|
\]

if \( n > 2, \) and

\[
M(p, R) \leq \left( \frac{R^n + s_0}{1 + s_0} \right) \|p\| - \left( \frac{R^n - 1}{1 + s_0} \right) m - \left( \frac{(R-1)^n}{2} \right) \|p'(0)|,
\]

if \( n = 2. \) Here

\[
s_0 = K^{t+1} \left( \frac{l}{n} \right)^{\frac{|a_1|}{|a_0|} - m} K^{t-1} + 1
\]

These inequalities sharpen a similar previous result by N. K. Govil [J. Inequal. & Appl. 7 (2002), 623–631; MR1931257].

References

115 (1992), 337–343. MR1113648


Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.

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