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Problems and results on polynomials and interpolation. (In English)

Aspects of contemporary complex analysis, Proc. instr. Conf., Durham/Engl. 1979, 383-391 (1980).

[For the entire collection see Zbl 483.00007.]

In this paper many problems and results on polynomials and interpolation are descibed and a survey of the last development of this subject is given. To give an example we present two of these problems: Let $p_n(z) = z^n + \cdots + a_n$, is true that the length of the lemniscate $|p_n(z)| = 1$ is maximal if $p_n(z) = z^n - 1$? Let $-1 \leq x_1 < \cdots < x_n \leq 1$ and denote the fundamental polynomial of Langrange interpolation by $l_k(x) : l_k(x_k) = 1, l_k(x_j) = 0$ for $1 \leq j \leq n, j \neq k$. Is it true that there exists a point system $\{x_j^{(n)}\}$ such that for every $x_0, \overline{\lim}_{n\to\infty} \sum_{j=1}^n l_j^{(n)}(x_0) = \infty$ but for every continous function f there is a Y_0 such that $\sum_{j=1}^n f(x_j^{(n)}) l_j^{(n)}(y_0) \to f(y_0)$ for $n \to \infty$?

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Classification:
30-02 Research monographs (functions of one complex variable)
30C10 Polynomials (one complex variable)
30E05 Moment problems, etc.
00A07 Problem books

Keywords:
problems and results on polynomials and interpolation