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Some classes of infinitely differentiable functions. (English) Zbl 0936.26012
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Summary: For nonquasianalytic Carleman classes conditions on the sequences $\{\widehat{M}_n\}$ and $\{M_n\}$ are investigated which guarantee the existence of a function in $C_J\{\widehat{M}_n\}$ such that

$$u^{(n)}(a) = b_n, \quad |b_n| \leq K^{n+1}M_n, \quad n = 0, 1, \dots, \quad a \in J.$$

Conditions of coincidence of the sequences $\{\widehat{M}_n\}$ and $\{M_n\}$ are analysed. Some still unknown classes of such sequences are pointed out and a construction of the required function is suggested.

The connection of this classical problem with the problem of the existence of a function with given trace at the boundary of the domain in a Sobolev space of infinite order is shown.

MSC:

26E10 C^∞ -functions, quasi-analytic functions

46E35 Sobolev spaces and other spaces of "smooth" functions, embedding theorems, trace theorems

Keywords:

Carleman class; Sobolev space

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