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## RESEARCH PROBLEM

33. E. W. Cheney and P. C. Curtis, Jr., *Convex bodies*.

Let  $M$  denote a linear manifold (i.e. translate of a linear subspace) in  $n$ -dimensional real space. For each real  $p > 1$  there is a unique point  $x_p = (\xi_{p1}, \dots, \xi_{pn})$  on  $M$  for which the norm  $(\sum_{j=1}^n |\xi_{pj}|^p)^{1/p}$  is a minimum. Prove or disprove the conjecture that  $\lim_{p \rightarrow \infty} x_p$  exists in all cases. The conjecture has been established by simple arguments when  $n \leq 3$ , when  $M$  has dimension 1 or  $n-1$ , and when there exists a unique point  $x_0 = (\xi_{01}, \dots, \xi_{0n})$  on  $M$  for which  $\max_j |\xi_{0j}|$  is a minimum. (Received January 20, 1962.)