Skalyga, V. I.
Sharpness conditions in multidimensional analogs of V. A. Markov’s inequality. (English. Russian original) [Zbl 1148.46028]

Let $X$ be a real normed vector space and let $\mathcal{P}_n(X; \mathbb{R})$ be the space of all continuous real-valued polynomials on $X$ of degree at most $n$. The Minkowski functional of a symmetric convex bounded closed body $K \subset X$ is denoted by $\rho$.

The author obtained estimates concerning the values $P^{(k)}(x)[h_1, \ldots, h_k]$ of the $k$th derivative of $P \in \mathcal{P}_n(X; \mathbb{R})$ in terms of Chebyshev polynomials and the Minkowski functional $\rho$ in V. I. Skalyga [Izv. Ross. Akad. Nauk Ser. Mat., 69, No. 3, 179–192 (2005; Zbl 1102.41011)]. In the present paper necessary and sufficient conditions for equality in the inequalities as noted above are established.

Reviewer: Hans-Andreas Braunß (Potsdam)

MSC:
46G25 (Spaces of) multilinear mappings, polynomials
47H60 Multilinear and polynomial operators

Keywords:
normed vector spaces; Markov’s inequality; Fréchet derivative; Minkowski function; convex body; Chebyshev polynomial; Schaefer-Duffin inequality

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References:

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