AMERICAN MATHEMATICAL SOCIETY
MathSciNet
Mathematical Reviews

Citations
From References: 3
From Reviews: 0

MR1606366 (99g:41012) 41A17 30C10
Gardner, Robert [**Gardner, Robert Bentley**] (1-ETNS); **Weems, Amy** (1-CO)
A Bernstein type L^p inequality for a certain class of polynomials. (English summary)
J. Math. Anal. Appl. **219** (1998), *no. 2,* 472–478.

The classical theorem of S. Bernstein [*Leçons sur les propriétés extrémales et la meilleure approximation des fonctions analytiques d'une variable réelle*, Gauthier-Villars, Paris, 1926; JFM 52.0256.02] relates the supremum norm of a complex polynomial P of degree at most n and its derivative P' by the Bernstein inequality $\sup_{|z|=1}|P'(z)| \leq n\cdot\sup_{|z|=1}|P(z)|$. The Bernstein inequality reduces to equality if and only if $P(z) = cz^n$ for some constant $c \in \mathbf{C}$. The inequality has been extended to the L^p norm [A. Zygmund, *Trigonometric series. 2nd ed. Vols. I, II*, Cambridge Univ. Press, New York, 1959; MR0107776]. The paper under review provides an L^p-estimate ($0 \leq p \leq \infty$) of P' in terms of P for the class consisting of the complex polynomials P of degree at most n which are nonzero inside a sufficiently large neighborhood of the origin of the complex plane $\mathbf{C}$ and satisfy the condition $P'(0) = \cdots = P^{(m-1)}(0) = 0$ ($m \leq n$) at the origin of $\mathbf{C}$.

Walter Schempp

© *Copyright American Mathematical Society 1999, 2016*