**Lp Inequalities for Polar Derivatives of Polynomials**

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Abstract. Let \( p(z) = \sum_{v=0}^{n} a_v z^v \) be a polynomial of degree \( n \) and for \( \alpha \in \mathbb{C} \), let \( D_{\alpha} p(z) = np(z) + (\alpha - z)p'(z) \) denote the polar derivative of the polynomial \( p(z) \) with respect to \( \alpha \). It is well known that the polar derivative generalizes the ordinary derivative. In this paper, we obtain \( L^p \) inequalities for polar derivatives of polynomials satisfying \( p(z) \equiv z^n p\left(\frac{1}{z}\right) \) and for polynomials satisfying \( p(z) \equiv z^n p\left(\frac{1}{z}\right) \). Our results generalize several results in this direction.


Key words and phrases: Inequalities, polar derivatives, self-reciprocal polynomials, self-inversive polynomials.

References

10. N. K. Govil, V. K. Jain and G. Labelle, Inequalities for polynomials satisfying \( p(z) \equiv z^n p\left(\frac{1}{z}\right) \), Proc. Amer. Math. Soc. 57 (1976), 238–242.
11. N. K. Govil and D. H. Vetterlein, Inequalities for a class of polynomials satisfying \( p(z) \equiv z^n p\left(\frac{1}{z}\right) \), Complex Variables, 31 (1996), 185–191.