

1086-30-1187

Michael J Miller* (millermj@lemoyne.edu), Dept of Mathematics, Le Moyne College, Syracuse, NY 13214. *A nonreal local extremum for the Sendov conjecture.* Preliminary report.

Let $S(n)$ be the set of all polynomials of degree n with all roots in the unit disk, and define $d(P)$ to be the maximum of the distances from each of the roots of a polynomial P to that root's nearest critical point. In this notation, Sendov's conjecture asserts that $d(P) \leq 1$ for every $P \in S(n)$.

Define $P \in S(n)$ to be *locally extremal* if $d(P) \geq d(Q)$ for all nearby $Q \in S(n)$, and note that identifying all locally extremal polynomials would settle the Sendov conjecture.

We have previously constructed real locally extremal polynomials of various degrees. In this paper, we construct a nonreal locally extremal polynomial of degree 9. (Received September 19, 2012)