1056-30-601 **Erin R Militzer*** (ermilitzer@gmail.com), 1234 Kastle Road, Lexington, KY 40502. *L^p Rational Approximation in the Complex Plane.* Preliminary report.

Take X to be a compact subset of the complex plane and consider area measure dA on X. Let $R(X)$ to be the class of functions that can be uniformly approximated on X by rational functions whose poles lie outside of X and $C(X)$ be the space of all continuous functions on X. If $R(X) \neq C(X)$ then there exists L^p bounded point evaluations or (bpe's) for the polynomials for all p, $1 < p \leq \infty$. It follows then that $H^p(X, dA) \neq L^p(X, dA)$ where $H^p(X, dA)$ is the closed subspace of $L^p(X, dA)$ that is spanned by the complex analytic polynomials. In contrast, Sinanjan proved in 1966 there exists a set in which $R(X) \neq C(X)$ but nevertheless, $R^p(X, dA) = L^p(X, dA)$, where $R^p(X, dA)$ is the closed subspace of $L^p(X, dA)$ that is spanned by the rational functions having no poles on X. We offer an alternative proof to Sinanjan's result. (Received September 14, 2009)