1057-30-199 **Erin R. Militzer*** (ermilitzer@gmail.com), 1234 Kastle Road, Lexington, KY 40502, and **J. E. Brennan** (brennan@ms.uky.edu). *L^p Rational Approximation.*

In 1968 Sinanjan proved the existence of a compact set X such that $R(X) \neq C(X)$ but $R^p(X, dA) = L^p(X, dA)$ for all p, $1 \leq p < \infty$. In 2009 the authors answered the corresponding question for $H^p(X, dA)$ which stands in contrast to Sinanjan's result. In this case, under the same assumption, a bounded point evaluation for the polynomials is present and therefore $H^p(X, dA) \neq L^p(X, dA)$. Here dA represents two dimensional Lebesgue measure and for each p, $1 \leq p < \infty$, $R^p(X, dA)$ is the closed subspace of $L^p(X, dA)$ that is spanned by rational functions whose pole's do not lie in X. We denote by $R(X)$ the class of functions that can be uniformly approximated on X by rational functions whose poles lie outside of X, and by $C(X)$ the space of all continuous functions on X. We provide an alternative proof to Sinanjan's result which depends on the fact that L^p capacities decrease modulo a constant under contraction whereas analytic capacity does not. (Received January 22, 2010)