

1025-30-79

L. R. Sons* (sons@math.niu.edu), Department of Mathematical Sciences, Northern Illinois University, DeKalb, IL 60115. *Analytic Functions in the Unit Disk with an Annular Derivative*. Preliminary report.

An analytic function f in the unit disk D is termed annular if there exists a sequence $J(n)$ of Jordan curves in D such that (1) $J(n)$ lies in the interior of $J(n+1)$, (2) for each positive a , there is an integer N such that $J(n)$ for $n > N$ lies in the set of z with the absolute value of z between $1-a$ and one, and (3) the minimum of the absolute value of $f(z)$ for z on $J(n)$ goes to infinity as n goes to infinity. We explore characteristics of analytic functions in D for which at least one derivative is annular. Annular functions were introduced by D. Bonar in his dissertation in 1970, where it was shown that the derivative of an annular function need not be annular. (Received January 15, 2007)