1046-11-453 **Brian C. Dietel*** (dietelb@onid.orst.edu), Oregon State University, Department of Mathematics, 368 Kidder Hall, Corvallis, OR 97331. *Mahler's order functions and p-adic algebraic approximation.*

If P is a polynomial of degree d define $\Lambda(P)$ to be the product of 2^d with the sum of the absolute value of the coefficients of P. In a 1971 paper Kurt Mahler defined the "order function" of each complex number α by $O(u|\alpha) = \sup \log |\frac{1}{P(\alpha)}|$ where the supremum is taken over all integer polynomials P satisfying $\Lambda(P) \leq u$ and $P(\alpha) \neq 0$. By placing a partial order on the order functions Mahler induced a classification of the complex numbers. We will consider the properties of order functions when α is a p-adic number. Many of the results previously obtained in the real case still hold for the p-adics. However, the unique properties of the p-adic numbers result in several exceptions. (Received September 03, 2008)