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Brian C. Dietel* (dietelb@math.oregonstate.edu), Department of Mathematics, Oregon State University, Corvallis, OR 97331. *Bounds on the order function of certain p -adic numbers.*

The order function O^* was introduced by Mahler and places a partial order on the set of complex numbers based on approximation by algebraic numbers. We consider the analogue of the function O^* on the p -adic numbers. In particular, we construct numbers in \mathbb{C}_p for which it is possible to obtain upper and lower bounds for O^* . Given any function that satisfies certain growth conditions we then use a specific case of this result to construct elements of \mathbb{C}_p for which O^* is equivalent to the original function. (Received September 18, 2009)