

Michigan Math Club

Thursday at 4pm in **East Hall 2851**
(Nesbitt Room) Free Pizza and Pop



Back to Our Primitive Roots

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Abstract for 12 Apr. 2012



When n is not divisible by 2 or 5, the decimal expansion of the number $1/n$ is an infinite repetition of some finite sequence of k digits. For instance, the fraction $1/7=0.142857142857142857\dots$ repeats the 6-digit sequence 142857. Given n , how large can k possibly be? We'll start by exploring this question, which will ultimately lead us to the notion of "primitive roots" and to a long standing unsolved problem. Then we will focus on the special case that n is a prime $p=4k+3$. In that case when the repeating sequence is "as long as possible," these digits actually encode a deep property of this prime number p .