Let \( f : [0, 1] \to [0, 1] \) be a function satisfying \( |f(x) - f(y)| < |x - y| \) for any \( x, y \in [0, 1] \). Show that there must be a unique \( c \in [0, 1] \) such that \( f(c) = c \).

Please submit your solution to:

- Dr. Christian Avart, cavart@gsu.edu

before the deadline: February 5th, 7:00pm. The WINNER will be awarded with a $15 gift certificate and will be announced in the NEXT issue.

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Solution to the December 2016 Problem of the Month

Fix the positive integer \( k \), and choose any \( t = 10^k + 1 \) positive integers \( i_1, i_2, \ldots, i_t \). Since each \( 2^i \) for \( 1 \leq j \leq t \) has one out of \( t - 1 \) possible remainders modulo \( 10^k \) and we have \( t \) such numbers, two must have the same remainder. The difference of these two will satisfy the required property.

Winner: no one...