

Michigan Math Club

Thursday at 4pm in the Commons

Free Pizza and Pop

Inverse Problems and Rootfinding

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Abstract for 17 September 2015

It's easy to multiply or to square a number, but finding square roots is harder. Try to compute the square root of 3 two ways: Start with the interval $[1,3]$ and repeatedly square the interval midpoint and take the left half interval or the right half, whichever contains $\sqrt{3}$; or, start with $x = 1$ and repeatedly replace x with the average of x and $3/x$. Which will be faster? How many iterations are needed to get 8 digits of accuracy? Can you think of other approaches?

