Brandon M. Keltz
An Introduction to Computational Science by Allen Holder and Joseph Eichholz
Chapter 1 - Solving Single Variable Equations
September 7, 2019

Problem 3. Show that the secant method can diverge even though the error, i.e. the value of $|f(x_k)|$, in solving

$$f(x) = \frac{x}{1 + x^2} = 0$$

diminishes at each iteration.