

Numerical Analysis
Nonlinear Equations

Given the system of equations

$$f_1(x) = x^2 - 4$$

$$f_2(x) = \tan^{-1}(2x)$$

This system has two solutions $(x_1, f_1(x_1))$ and $(x_2, f_2(x_2))$ with $x_1 < x_2$.

1. Using appropriate initial guesses and tolerance, find an approximation for x_1 using the Secant Method.
2. Using an appropriate initial guess and tolerance, find an approximation for x_2 using the Fixed Point Iteration Method.
3. Plot the curves and solutions in one figure.