Homework: Secant Method

Follow format of HW as given at
http://www.eng.usf.edu/~kaw/class/programming/homework/sample_homework.htm
for Sample HW for assignments *before* Test#1

To submit: 1) Affidavit Sheet 2) Published Mfile

The secant method is used to approximate the value of the root(s) of an equation $f(x)=0$. The secant method requires the user to make two initial guesses x_0 and x_1 of the root of the equation, but which do not necessarily need to bracket the root. The secant method iterative formula is given by

$$x_{k+1} = x_k - \frac{x_k - x_{k-1}}{f(x_k) - f(x_{k-1})} f(x_k),\ k = 1, 2, 3, \ldots$$

where

x_{k+1} is the current approximation,

x_k is one of the previous approximations,

x_{k-1} is the other previous approximation.

This process is repeated until the root is found.

Write a MATLAB program that uses the secant method to find the approximate root(s) of an equation. The program inputs are, the function `f`, the first two guesses, `x1` and `x2`, and the number of iterations to conduct, `n`. The output is the approximate value of the root of the equation, `rootval` at the end of the last iteration.

You are not allowed to use a vector to store the approximations of the root.

Hint: Be sure not to use two numbers with equal magnitude for the initial two guesses, and only use a reasonable number of loop repetitions.