Project #7
ENGR 2450

Title: Find the Minimum

Write a MATLAB function to find a minimum of a given function, $y = f(x)$, using the following algorithm.

1. Find an initial interval $[a, b]$ that contains a point m such that $a < m < b$ and $f(a) > f(m)$ and $f(b) > f(m)$. This interval should be relatively large.
2. Use the Golden Mean algorithm until $b - a < \varepsilon$.
3. Fit a quadratic polynomial to the three points used in the last iteration of Step 2 to get an estimate of x_{min} according to the method described at the bottom of page 409 of the text.
4. Return x_{min}.

The function, an initial guess at a, and ε are input parameters to your MATLAB function. You can test your MATLAB function using the following functions:

$$y = \sin(4.3x) + \cos(2.7x)\ for\ |x| < 2$$

$$y = -x * e^{-3x}\ for\ x > 0$$

$$y = (x^2 - x)^2 + x - 5\ for\ |x| < 2$$

This is due on 4 April 2011.