Labwork Set # 4 − Math 371 − Fall 2009 Due date: 10//2009

1. [points] In class we looked at the function $f(x) = sign(x)\sqrt{|x|}$. Write code in MATLAB to compare the behavior of Newton's method, the Bisection method and the Secant Method, starting with $x_0 = 1$ for all three and $x_{-1} = -1$ for second two. Be very careful finding $f'(x)$! Experiment with at least three other starting values, some okay, some not so good, to get a feel for what else may happen.

2. [points] Problem 4.3 in Moler's book.

3. [points] Write a function to compute the IQI approximation for a root of a function, which takes in the three inital guess values. Use it to find the roots of the function discussed in your written homework problem 4. Experiement with at least 3 initial guesses again to get a feel for what else may happen.