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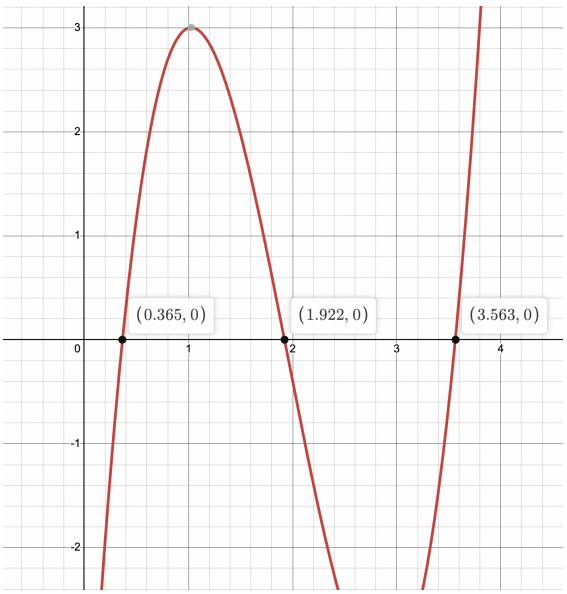
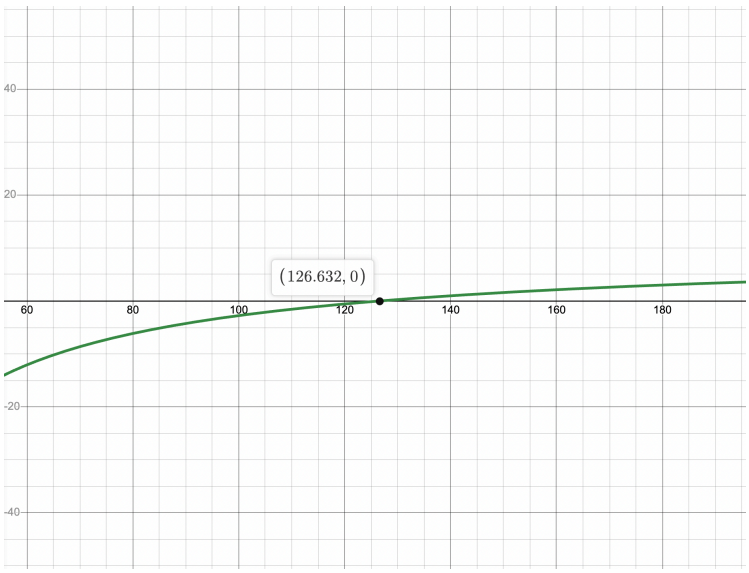
CS3010 Numerical Methods
Professor A. Raheja
Project 3

First equation



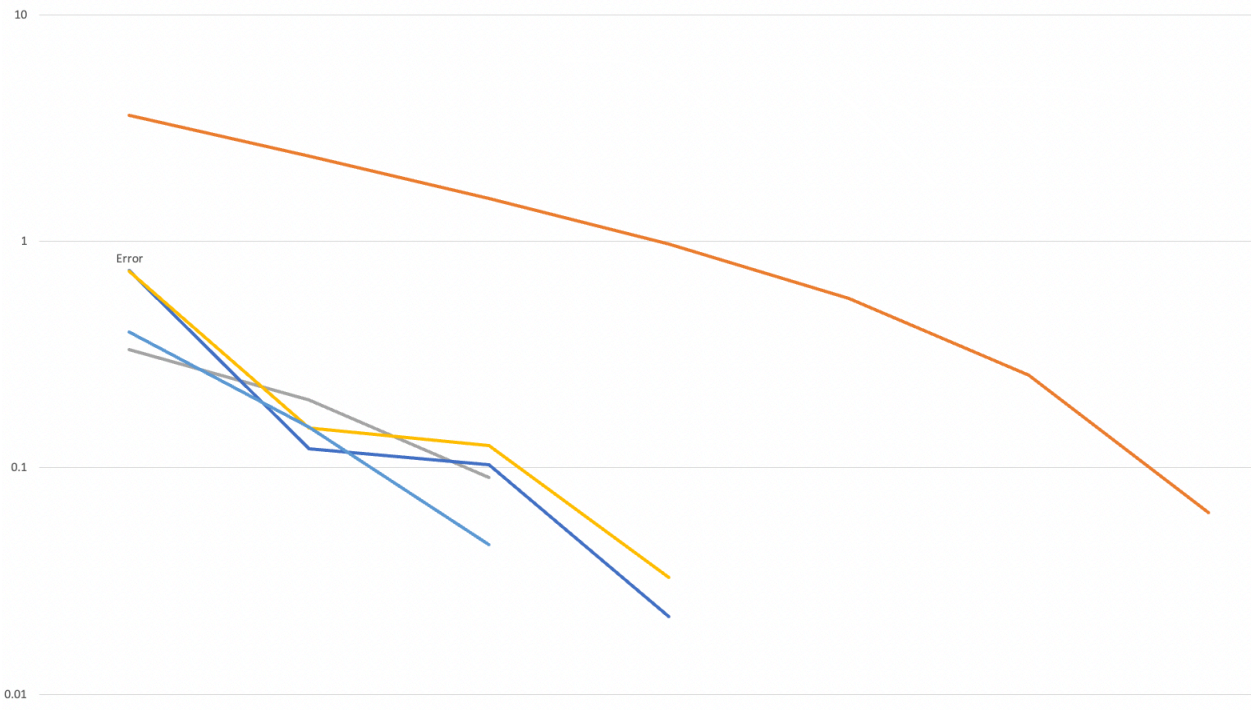
Second equation



These are the true solutions, calculated by desmos graphing software.

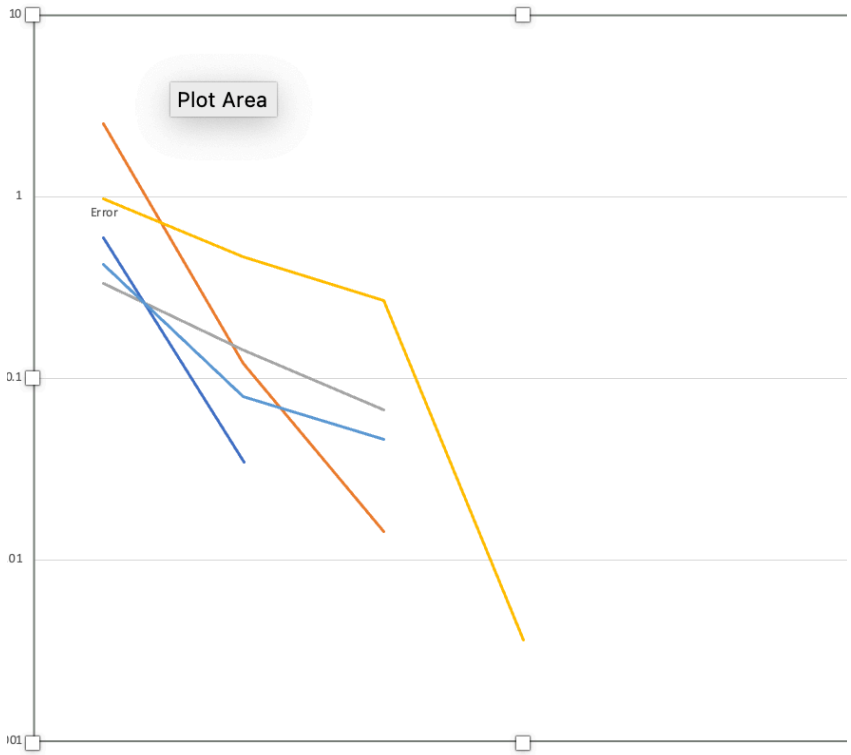
X1: .365
First solution for the first equation.

KEY:
Yellow: Secant Method
Dark Blue: Modified Secant Method
Light Blue: False Position Method
Red: Newton method
Grey: Bisection Method
X axis: iterations, Y axis: error.
All graphing was done by Excel.



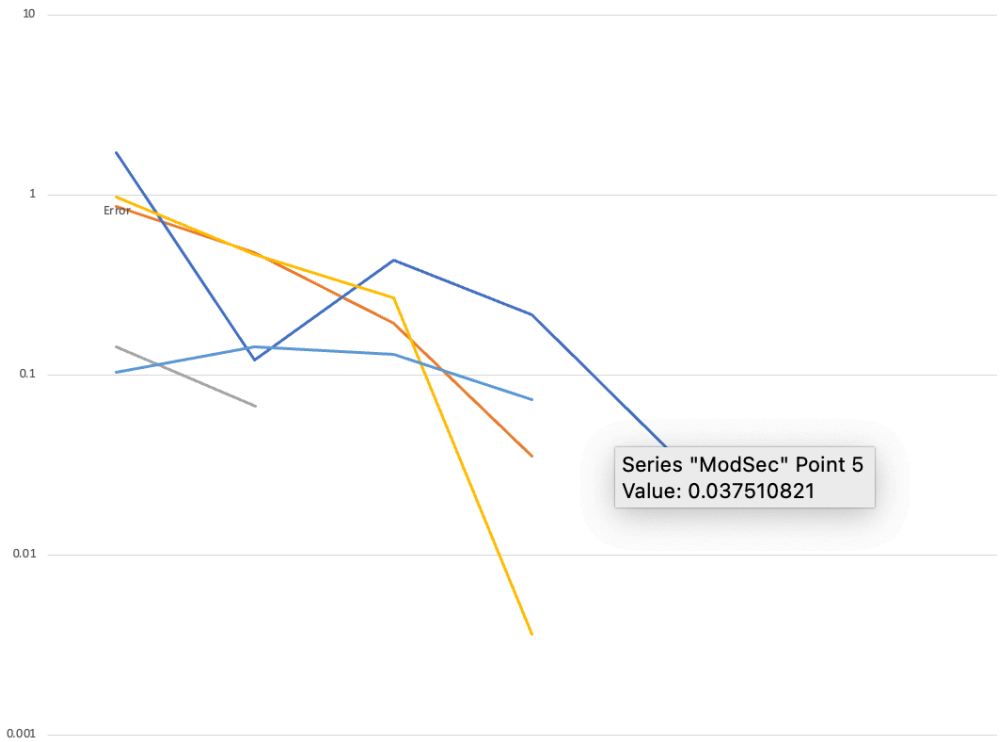
X2: 1.922
Second solution for the first equation

KEY:
Yellow: Secant Method
Dark Blue: Modified Secant Method
Light Blue: False Position Method
Red: Newton method
Grey: Bisection Method
X axis: iterations, Y axis: error.
All graphing was done by Excel.

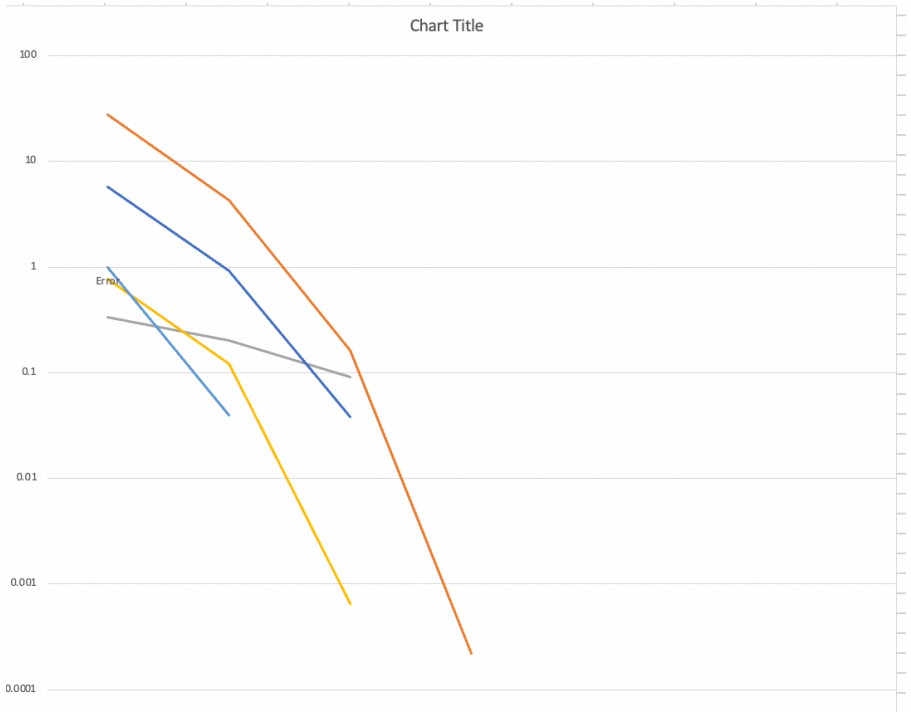


X3: 3.563
Third solution for the first equation.

KEY:
Yellow: Secant Method
Dark Blue: Modified Secant Method
Light Blue: False Position Method
Red: Newton method
Grey: Bisection Method
X axis: iterations, Y axis: error.
All graphing was done by Excel.



X= 126.632
Solution for the 2nd Equation
KEY:
Yellow: Secant Method
Dark Blue: Modified Secant Method
Light Blue: False Position Method
Red: Newton method
Grey: Bisection Method
X axis: iterations, Y axis: error.
All graphing was done by Excel.



Summary:

This was quite a difficult but extremely interesting project for me. The programming came easy, it was the understanding of the methods at hand that took more time and application.

For my error calculations, my initial estimates played a huge roll in landing me usable data for the graphs in the end. A lot of the time, my “guesses” were so accurate that the error would be below the .1 threshold, not rendering me any graph able data. This was incredibly frustrating because I would. Have to go in and change the numbers around to dumb down my guess.

In the end, I have 5 methods that, provided close enough approximations, can effectively calculate the zeros of non linear equations.