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MATH 446

**Project 2: Results**

**1.) Equations used to solve for the roots:**

|  |  |  |
| --- | --- | --- |
| **Fixed Point** | **# of FPI Steps** | **Initial Guess** |
| 1.4144407663 | ~50 steps | 1.5 |

|  |  |  |
| --- | --- | --- |
| **Fixed Point** | **# of FPI Steps** | **Initial Guess** |
| -0.5823547828 | ~22 steps | 0 |

|  |  |  |
| --- | --- | --- |
| **Fixed Point** | **# of FPI Steps** | **Initial Guess** |
| 3.3469924748 | ~40 steps | 3 |

**2.) Derivatives of Equations used to solve for the roots:** \*Note: S was found by plugging in the fixed point for r.

0.653109842567786

0.331441604363550

0.541297146509449

**3.) Table showing Matlab results compared with step 2 results:**

\*MATLAB Convergence Rate pulled from 3rd column of the FPI output (in the middle).

|  |  |  |
| --- | --- | --- |
|  | **Convergence Rate** | **Convergence Rate (MATLAB)\*** |
|  | 0.653109842567786 | 0.653104484540794 |
|  | 0.331441604363550 | 0.331441398524143 |
|  | 0.541297146509449 | 0.541297157697123 |

**Summary:**

FPI was successful in finding all three roots of the initial equation:

After calculating the derivatives the convergence rate found was similar to those found during the execution of fixed point iteration using MATLAB to, at the worst, 5 decimal places.