# CDS251HW8 Report

***Submission:*** *Make a table whose columns are: The root, starting x - values (Bisection will have 2, Newton’s will have only 1), value of the function at the root, and the number of iterations needed for convergence. There will be 10 rows, 5 for each of the two different methods. Label the columns and the rows.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Root | x1 | x2 | f(root) | Count |
| Bisection | 4.1975429268019582 | 0 | 5 | -3.2196467714129540E-015 | 45 |
| Bisection | 5.5529289827640582 | 5 | 7 | 4.3298697960381105E-015 | 45 |
| Bisection | 9.4998682181811631 | 7 | 10 | 0.0000000000000000 | 46 |
| Bisection | 13.039839094508920 | 10 | 14 | 6.8833827526759706E-015 | 45 |
| Bisection | 14.885498813555330 | 14 | 15 | -4.4408920985006262E-015 | 44 |
| Newton’s | 4.1975429268019528 | 0 | N/A | 2.2204460492503131E-016 | 2 |
| Newton’s | 5.5529289827640511 | 5 | N/A | 1.1102230246251565E-016 | 2 |
| Newton’s | 9.4998682181811631 | 7 | N/A | 0.0000000000000000 | 2 |
| Newton’s | 13.039839094508912 | 10 | N/A | 4.4408920985006262E-016 | 2 |
| Newton’s | 14.885498813555325 | 14 | N/A | 0.0000000000000000 | 2 |
| Secant | 4.1975429268019528 | 0 | 5 | 2.2204460492503131E-016 | 3 |
| Secant | 5.5529289827640511 | 5 | 7 | 1.1102230246251565E-016 | 3 |
| Secant | 9.4998682181811631 | 7 | 10 | 0.0000000000000000 | 3 |
| Secant | 13.039839094508912 | 10 | 14 | 4.4408920985006262E-016 | 3 |
| Secant | 14.885498813555325 | 14 | 15 | 0.0000000000000000 | 3 |

***Extra Credit:*** *Implement Secant method and find the five roots with this program also in double precision. Add these results to the table above and also include the Secant method program on the assignment page.*