CS323 Project 1 Test Cases

Horners:

Test Case 1:
Input:
3
2
3
-1
2
3.5

Output:
Result 1: 86.000000
Result 2: 69.500000
Result 3: 40.000000
Result 4: 12.000000

Test Case 2:
Input:
4
4
1
-10
-2
1
2

Output:
Result 1: -34.000000
Result 2: -31.000000
Result 3: 4.000000
Result 4: 36.000000
Result 5: 24.000000

Test Case 3:
Input:
3
4

3
2
1
6.5

Output:
Result 1: 382.625000
Result 2: 155.750000
Result 3: 43.000000
Result 4: 6.000000

Test Case 4:
Input:
4
10
-6
4
9
1
8

Output:
Result 1: 8922.000000
Result 2: 3834.000000
Result 3: 1208.000000
Result 4: 246.000000
Result 5: 24.000000

Test Case 5:
Input:
3
7
2
5
5
3

Output:
Result 1: 193.000000
Result 2: 167.000000

Result 3: 100.000000
Result 4: 30.000000

Newton with Horners:

Test Case 1:
Input:
2
-2
0
1
1
10^-10
100

Output:
Final val: 1.414214

Test Case 2:
Input:
4
4
1
-10
-2
1
2
10^-5
100

Output:
Final val: 0.654024

Test Case 3:
Input:
4
5
4
3
2
1
3
10^-5

100

Output:
Error: no solution found

Test Case 4:
Input:
3
4
7
2
5
2.5
10^-5
100

Output:
Final val: -0.541721

Test Case 5:
Input:
3
1
2
3
4
3.5
10^-5
100

Output:
Final val: -0.605830

Cramer's Rule:

Test Case 1:
Input:
3 -1 4 3 0 2 2 1 -3 5 2 1 0

Output:
determinant A = -14.000
determinant A1 = 0.000
determinant A2 = -4.000
determinant A3 = -3.000
x1 = -0.00000
x2 = 0.28571
x3 = 0.21429

Test Case 2:
Input:
3 1 0 2 0 2 1 4 -3 0 9 8 -2

Output:
determinant A = -13.000
determinant A1 = -13.000
determinant A2 = -26.000
determinant A3 = -52.000
x1 = 1.00000
x2 = 2.00000
x3 = 4.00000

Test Case 3:
Input:
3 1 -1 1 2 1 1 -1 -2 2 4 7 -1

Output:
determinant A = 6.000
determinant A1 = 18.000
determinant A2 = -0.000
determinant A3 = 6.000
x1 = 3.00000
x2 = -0.00000
x3 = 1.00000

Test Case 4:
Input:
2 3 4 -2 -3 -14 11

Output:
determinant A = -1.000
determinant A1 = -2.000
determinant A2 = 5.000
x1 = 2.00000
x2 = -5.00000

Test Case 5:
Input:
3 2 1 -1 3 2 2 4 -2 3 1 13 9

Output:
determinant A = 33.000
determinant A1 = 33.000
determinant A2 = 66.000
determinant A3 = 99.000
x1 = 1.00000
x2 = 2.00000
x3 = 3.00000

Neville's Method:

Test Case 1:
Input:
3,0,2.8,1,3.5,2,1.6,3,3.0,3.5

Output:
6.7812

Test Case 2:
Input:
3,8.1,16.9446,8.3,17.56492,8.6,18.50515,8.7,18.82091,8.4

Output:
17.8771

Test Case 3:
Input:
4,1.0,0.7651977,1.3,0.6200860,1.6,0.4554022,1.9,0.2818186,2.2,0.1103623,1.5

Output:
0.5118

Test Case 4:
Input:
3,8.1,16.9,8.3,17.5,8.6,18.5,8.7,18.8,8.4

Output:
17.8350

Test Case 5:
Input:
4,2,1,2.6,0.8,3.2,0.7,3.8,0.5,4.4,0,1.5

Output:
1.3873