Q1D - (2)

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>> Newton_Raphson
Enter initial point for function evaluation: 2
Enter allowed error: 1e-5
Enter lowest function value for termination: 0
Enter max iterations: 15
Enter a function in terms of x: 4*x^3 - 1 - exp((x^2)/2)
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The root is: 1.2892955
Iterations: 1.0000000
Function value is: 5.2767581
Derivative value is: 16.9872531
Enter a function in terms of x: 4*x^3 - 1 - exp((x^2)/2)
The root is: 0.9786651
Iterations: 2.0000000
Function value is: 1.1351185
Derivative value is: 9.9135790
Enter a function in terms of x: 4*x^3 - 1 - exp((x^2)/2)
The root is: 0.8641637
Iterations: 3.0000000
Function value is: 0.1287070
Derivative value is: 7.7060196
Enter a function in terms of x: 4*x^3 - 1 - exp((x^2)/2)
The root is: 0.8474616
Iterations: 4.0000000
Function value is: 0.0025239
Derivative value is: 7.4047000
Enter a function in terms of x: 4*x^3 - 1 - exp((x^2)/2)
The root is: 0.8471207
Iterations: 5.0000000
Function value is: 0.0000010
Derivative value is: 7.3986072

ans =

    0.8471
```

Start value = 2	
Iterations	Root value
1	1.2892955
2	0.9786651
3	0.8641637
4	0.8474616
5	0.8471207
Final Root Value	0.8471

As seen from the number of iterations above, a total of five iterations are needed to achieve an error less than 10^{-5}.