**4.**

**bisect(0,2,1.0E-8,20,4), The bisection method**

We are printing, count, a, b, c, f(c), (b-a)/2 where, (b-a)/2 is the error

iteration = 1.0000e+00 0 2.0000e+00 1.0000e+00 -3.4147e-01 1.0000e+00

iteration = 2.0000e+00 1.0000e+00 2.0000e+00 1.5000e+00 7.5251e-01 5.0000e-01

iteration = 3.0000e+00 1.0000e+00 1.5000e+00 1.2500e+00 1.1352e-01 2.5000e-01

iteration = 4.0000e+00 1.0000e+00 1.2500e+00 1.1250e+00 -1.3664e-01 1.2500e-01

iteration = 5.0000e+00 1.1250e+00 1.2500e+00 1.1875e+00 -1.7281e-02 6.2500e-02

iteration = 6.0000e+00 1.1875e+00 1.2500e+00 1.2188e+00 4.6682e-02 3.1250e-02

iteration = 7.0000e+00 1.1875e+00 1.2188e+00 1.2031e+00 1.4343e-02 1.5625e-02

iteration = 8.0000e+00 1.1875e+00 1.2031e+00 1.1953e+00 -1.5583e-03 7.8125e-03

iteration = 9.0000e+00 1.1953e+00 1.2031e+00 1.1992e+00 6.3699e-03 3.9063e-03

iteration = 1.0000e+01 1.1953e+00 1.1992e+00 1.1973e+00 2.4002e-03 1.9531e-03

iteration = 1.1000e+01 1.1953e+00 1.1973e+00 1.1963e+00 4.1954e-04 9.7656e-04

iteration = 1.2000e+01 1.1953e+00 1.1963e+00 1.1958e+00 -5.6975e-04 4.8828e-04

iteration = 1.3000e+01 1.1958e+00 1.1963e+00 1.1960e+00 -7.5192e-05 2.4414e-04

iteration = 1.4000e+01 1.1960e+00 1.1963e+00 1.1962e+00 1.7215e-04 1.2207e-04

iteration = 1.5000e+01 1.1960e+00 1.1962e+00 1.1961e+00 4.8474e-05 6.1035e-05

iteration = 1.6000e+01 1.1960e+00 1.1961e+00 1.1961e+00 -1.3360e-05 3.0518e-05

iteration = 1.7000e+01 1.1961e+00 1.1961e+00 1.1961e+00 1.7557e-05 1.5259e-05

iteration = 1.8000e+01 1.1961e+00 1.1961e+00 1.1961e+00 2.0982e-06 7.6294e-06

iteration = 1.9000e+01 1.1961e+00 1.1961e+00 1.1961e+00 -5.6310e-06 3.8147e-06

iteration = 2.0000e+01 1.1961e+00 1.1961e+00 1.1961e+00 -1.7664e-06 1.9073e-06

root = 1.196082115173340

error\_bound = 9.5367e-07

it\_count = 20

ans = 1.1961

**falseposition(0,2,10^-8)**

iteration = 0 0 2.0000 -0.7133

iteration = 1.0000 0.3236 2.0000 -0.6632

iteration = 2.0000 0.6855 2.0000 -0.4064

iteration = 3.0000 0.9534 2.0000 -0.1894

iteration = 4.0000 1.0953 2.0000 -0.0771

iteration = 5.0000 1.1569 2.0000 -0.0296

iteration = 6.0000 1.1813 2.0000 -0.0112

iteration = 7.0000 1.1906 2.0000 -0.0042

iteration = 8.0000 1.1940 2.0000 -0.0015

iteration = 9.0000 1.1953 2.0000 -0.0006

iteration = 10.0000 1.1958 2.0000 -0.0002

iteration = 11.0000 1.1960 2.0000 -0.0001

iteration = 12.0000 1.1960 2.0000 -0.0000

iteration = 13.0000 1.1961 2.0000 -0.0000

iteration = 14.0000 1.1961 2.0000 -0.0000

iteration = 15.0000 1.1961 2.0000 -0.0000

iteration = 16.0000 1.1961 2.0000 -0.0000

iteration = 17.0000 1.1961 2.0000 -0.0000

iteration = 18.0000 1.1961 2.0000 -0.0000

iteration = 19.0000 1.1961 2.0000 -0.0000

iteration = 20.0000 1.1961 2.0000 -0.0000

ans = 1.1961

**newton(2,1.0E-8,20,1)**

iteration = 0 2.0000e+00 2.5907e+00 4.4161e+00 -5.8664e-01

iteration = 1.0000e+00 1.4134e+00 5.0995e-01 2.6699e+00 -1.9100e-01

iteration = 2.0000e+00 1.2224e+00 5.4257e-02 2.1033e+00 -2.5796e-02

iteration = 3.0000e+00 1.1966e+00 9.7719e-04 2.0276e+00 -4.8195e-04

iteration = 4.0000e+00 1.1961e+00 3.4037e-07 2.0262e+00 -1.6799e-07

iteration = 5.0000e+00 1.1961e+00 4.1189e-14 2.0262e+00 -2.0428e-14

root = 1.196082033297135

error = -2.0428e-14

it\_count = 6

ans = 1.1961