BISECTION PROGRAM: OUTPUT

```
======MENU====
1) Enter the limits of the roots of given polynomial
2) Let the program calculate the limits of the roots.
Your choice: 1

Enter the Roots: 1 2
|       f(1.000000)=-9.000000    |
|      f(2.000000)=-25.000000    |


The actual root of the polynomial do not lie between (1.000000,
2.000000).
======MENU====
1) Enter the limits of the roots of given polynomial
2) Let the program calculate the limits of the roots.
Your choice: 2
|f(0.000000)=-1.000000   (-ive)        |
|f(0.500000)=-3.250000   (-ive)        |
|f(1.000000)=-9.000000   (-ive)        |
|f(1.500000)=-16.750000  (-ive)        |
|f(2.000000)=-25.000000  (-ive)        |
|f(2.500000)=-32.250000  (-ive)        |
|f(3.000000)=-37.000000  (-ive)        |
|f(3.500000)=-37.750000  (-ive)        |
|f(4.000000)=-33.000000  (-ive)        |
|f(4.500000)=-21.250000  (-ive)        |
|f(5.000000)=-1.000000   (-ive)        |
|f(5.500000)=29.250000   (+ive)        |

The roots lie between ( 5.000000 , 5.500000 )
Enter the allowed error and number of iterations: 0.001 15
```

#No	r1	r2	x	f(x)		aer	ae
=======	=======	=======	=======	=========================	=======	=======
1	5.00000	5.50000	5.25000	12.781250 (+ive)	5.25000	0.00100
2	5.00000	5.25000	5.12500	5.566406 (+ive)	0.12500	0.00100
3	5.00000	5.12500	5.06250	2.203613 (+ive)	0.06250	0.00100
4	5.00000	5.06250	5.03125	0.582092 (+ive)	0.03125	0.00100
5	5.00000	5.03125	5.01562	-0.213860 (-ive)	0.01562	0.00100
6	5.01562	5.03125	5.02344	0.182887 (+ive)	0.00781	0.00100
7	5.01562	5.02344	5.01953	-0.015793 (-ive)	0.00391	0.00100
8	5.01953	5.02344	5.02148	0.083470 (+ive)	0.00195	0.00100
9	5.01953	5.02148	5.02051	0.033819 (+ive)	0.00098	0.00100
10	5.01953	5.02051	5.02002	0.009008 (+ive)	0.00049	0.00100
11	5.01953	5.02002	5.01978	-0.003394 (-ive)	0.00024	0.00100
12	5.01978	5.02002	5.01990	0.002807 (+ive)	0.00012	0.00100
13	5.01978	5.01990	5.01984	-0.000293 (-ive)	0.00006	0.00100
14	5.01984	5.01990	5.01987	0.001257 (+ive)	0.00003	0.00100
15	5.01984	5.01987	5.01985	0.000482 (+ive)	0.00002	0.00100

```
After completing 15 iterations, the root is: 5.019852
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REGULA–FALSI PROGRAM: OUTPUT

```
======MENU====
1) Enter the limits of the roots of given polynomial
2) Let the program calculate the limits of the roots.
Your choice: 2
|f(0.000000)=-1.200000  (-ive)  |
|f(0.500000)=-1.350515  (-ive)  |
|f(1.000000)=-1.200000  (-ive)  |
|f(1.500000)=-0.935863  (-ive)  |
|f(2.000000)=-0.597940  (-ive)  |
|f(2.500000)=-0.205150  (-ive)  |
|f(3.000000)=0.231364   (+ive)  |

The roots lie between ( 2.500000 , 3.000000 )
Enter the allowed error and number of iterations: 0.1 4
```

#No	r1	r2	x	f(x)		aer	ae
=====	=====	=====	=====	====================	====	=====	=====
1	2.50000	3.00000	2.73499	-0.004933	(-ive)	2.73499	0.10000
2	2.73499	3.00000	2.74052	-0.000111	(-ive)	0.00553	0.10000
3	2.74052	3.00000	2.74064	-0.000002	(-ive)	0.00012	0.10000
4	2.74064	3.00000	2.74065	0.000000	(+ive)	0.00000	0.10000

```
After completing 4 iterations, the root is: 2.740646
```

NEWTON-RAPHSON PROGRAM: OUTPUT

```
======MENU====
1) Enter the limits of the roots of given polynomial
2) Let the program calculate the limits of the roots.
Your choice: 2
|f(0.000000)=-10.000000  (-ive)         |
|f(0.500000)=-10.437500  (-ive)         |
|f(1.000000)=-10.000000  (-ive)         |
|f(1.500000)=-6.437500  (-ive)          |
|f(2.000000)=4.000000  (+ive)           |

The roots lie between ( 1.500000 , 2.000000 )
Enter the allowed error and number of iterations: 0.001 15

Let us take x0 = 2.000000
```

#No	x	aer	ae
=======	================	=======	=======
1	x1 = 1.87097	0.12903	0.00100
2	x2 = 1.85578	0.01519	0.00100
3	x3 = 1.85558	0.00020	0.00100
4	x4 = 1.85558	0.00000	0.00100
5	x5 = 1.85558	0.00000	0.00100
6	x6 = 1.85558	0.00000	0.00100

Since we get the same values of x, i.e 1.855585, hence we
stop here, and donot go further.
After completing 6 iterations, the root is: 1.855585