

OUTPUT

Equation: $x^3 - 4x + 1$

```
D:\CBNST\biscetion.exe

Enter the values of a, b, allowed error and maximum iterations:
3
2
0.0005
20
Iteration no.   1 X = 2.50000
Iteration no.   2 X = 2.75000
Iteration no.   3 X = 2.62500
Iteration no.   4 X = 2.68750
Iteration no.   5 X = 2.71875
Iteration no.   6 X = 2.70313
Iteration no.   7 X = 2.71094
Iteration no.   8 X = 2.70703
Iteration no.   9 X = 2.70508
Iteration no.  10 X = 2.70605
Iteration no.  11 X = 2.70654
Hence, After 11 iterations, root = 2.7065

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Process exited after 27.99 seconds with return value 0
Press any key to continue . . .
```

OUTPUT

Equation: $\cos(x) - xe^x$

```
D:\CBNST\regula falsi.exe

Enter the values of x0, x1, allowed error and maximum iterations:
0
1
0.0005
20
Iteration no.   1 X = 0.31467
Iteration no.   2 X = 0.44673
Iteration no.   3 X = 0.49402
Iteration no.   4 X = 0.50995
Iteration no.   5 X = 0.51520
Iteration no.   6 X = 0.51692
Iteration no.   7 X = 0.51748
Iteration no.   8 X = 0.51767

Hence, After 8 iterations, root = 0.5177

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Process exited after 11.15 seconds with return value 0
Press any key to continue . . .
```

OUTPUT

Equation: $\cos(x)-3x+1$

```
D:\CBNST\iteration.exe
Enter initial guess, tolerable error, maximum iteration:
0
0.0001
16

Step    x0          f(x0)        x1          f(x1)
1       0.000000    2.000000    0.666667   -0.214113
2       0.666667   -0.214113    0.595296    0.042095
3       0.595296    0.042095    0.609328   -0.007950
4       0.609328   -0.007950    0.606678    0.001514
5       0.606678    0.001514    0.607182   -0.000288
6       0.607182   -0.000288    0.607086    0.000055

Hence, root is 0.607086:
-----
Process exited after 12.32 seconds with return value 0
Press any key to continue . . .
```

OUTPUT

Equation: $x_1 + x_2 + x_3 = 9$

$$2x_1 - 3x_2 + 4x_3 = 13$$

$$3x_1 + 4x_2 + 5x_3 = 40$$

```
D:\CBNST\Gauss_jordan.exe
enter the no. of unknowns:
3
enter coefficients of equation1
1 1 1 9
enter coefficients of equation2
2 -3 4 13
enter coefficients of equation3
3 4 5 40

Here is our augmented matrix:
1.0    1.0    1.0    9.0
2.0   -3.0    4.0   13.0
3.0    4.0    5.0   40.0

reduced Diagonal matrix is:
1.000000    0.000000    0.000000    1.000000
0.000000   -5.000000    0.000000   -15.000000
0.000000    0.000000    2.400000   12.000000

Hence solution are:
      X[1]=1.0000
      X[2]=3.0000
      X[3]=5.0000
-----
```

OUTPUT

Equation: $2x_1 + x_2 + x_3 = 10$

$3x_1 + 2x_2 + 3x_3 = 18$

$1x_1 + 4x_2 + 9x_3 = 16$

```
D:\CBNST\Gauss elimination.exe
enter the no. of unknowns:
3
enter coefficients of equation1
2 1 1 10
enter coefficients of equation2
3 2 3 18
enter coefficients of equation3
1 4 9 16

Here is our augmented matrix:
2.0    1.0    1.0    10.0
3.0    2.0    3.0    18.0
1.0    4.0    9.0    16.0

reduced upper triangular matrix is:
2.000000    1.000000    1.000000    10.000000
0.000000    0.500000    1.500000    3.000000
0.000000    0.000000    -2.000000    -10.000000
The solution is:
x1=7.000000
x2=-9.000000
x3=5.000000
-----
Process exited after 36.21 seconds with return value 0
Press any key to continue . . .
```

OUTPUT

Equation: $20x + y - 2z = 17$
 $20z = 25$

$3x + 20y - z = -18$

$2x - 3y +$

```
D:\CBNST\Gauss jacobi.exe
Enter tolerable error:
0.0001

Count    x        y        z
1        0.8500   -0.9000   1.2500
2        1.0200   -0.9650   1.0300
3        1.0013   -1.0015   1.0032
4        1.0004   -1.0000   0.9997
5        1.0000   -1.0001   1.0000

Solution: x=1.000, y=-1.000 and z = 1.000
```

OUTPUT

Equation: $3x + 20y - z = -18$
 $2x - 3y + 20z = 25$
 $20x + y - 2z = 17$

```
D:\CBNST\Gauss seidal.exe
Enter tolerable error:
0.0001
Count  x      y      z
1      0.8500 -1.0275 1.0109
2      1.0025 -0.9998 0.9998
3      1.0000 -1.0000 1.0000
4      1.0000 -1.0000 1.0000

Solution: x=1.000, y=-1.000 and z = 1.000
```

OUTPUT

Equation:

$$T = 2\pi \sqrt{\frac{l}{g}}$$

```
D:\CBNST\errors.exe
enter true value for variable a: 1.333333
enter approximate value: 1.33

Absolute error : 2.200598
Relative error : 0.950003
Percentage error : 95.000267
-----
Process exited after 20.45 seconds with return value 0
Press any key to continue . . .
```