```
//////////////////////////////////////////
Bisection method
//////////////////////////////////////////

#include <stdio.h>
#include <stdlib.h>
#include <math.h>

#define F(x) (3 * x - cos(x) - 1)

int main()
{
    int i = 0;
    float a, b, c, f;

    printf("\nEnter the value of a and b: ");
    scanf("%f %f", &a, &b);

    do
    {
        c = (a + b) / 2;
        f = F(c);

        printf("\ni=%d  a=%.4f  b=%.4f  c=%.4f  F(c)=%.4f", i, a, b, c, f);

        if (F(a) * F(c) < 0)
        {
            b = c;
        }
        else
        {
            a = c;
        }
        i++;
    } while (fabs(F(c)) > 0.001);

    printf("\n\nApproximate root = %.4f\n\n", c);
    return 0;
}




//////////////////////////////////////////
```

```
/////////////////////////////////////
Newton Raphson method
/////////////////////////////////////

#include <stdio.h>
#include <stdlib.h>
#include <math.h>
#define f(x) 3*x- cos (x) - 1   //define f(x) pow(x,3)-4*x+1  define df(x) 3*x*x-4
#define df(x) 3 + sin (x)

int main()
{
   float x0,x1,f0,f1,df0;
   int i=0;
   printf("Enter the value of x0");
   scanf("%f",&x0);

   do
   {
      f0=f(x0);
      df0=df(x0);
      x1=x0-(f0/df0);
      f1=f(x1);
      x0=x1;
      i++;

      printf("no of iteration = %d\t",i);
      printf("x0 = %f\t",x0);
      printf("df0 = %f\t",df0);
      printf("root = %f\t",x1);

      printf("value of function = %f\t\n",f1);

   }while (fabs(f1)>0.001);

   return 0;
}



/////////////////////////////////////
```

```c
/////////////////////////////////////
False position method
/////////////////////////////////////

#include <stdio.h>
#include <stdlib.h>
#include <math.h>
#define f(x) (3 * x - cos(x) - 1)

int main()
{
    int i = 0;
    float x0,x1,c,f0,f1,f2;

    printf("\nEnter the value of a and b: ");
    scanf("%f %f", &x0, &x1);
    do
    {
        f0=f(x0);
        f1=f(x1);
        f2=f(c);
        c=((x0*f1)-(x1*f0))/(f1-f0);

        if (f0*f2 < 0)
        {
            x1 = c;
            f1=f2;
        }
        else
        {
            x0=c;
            f0=f2;
        }
        i++;
        printf("Iteration =%d\t",i);
        printf("a =%f\t",x0);
        printf("b =%f\t",x1);
        printf("root =%f\t",c);
        printf("value of function =%f\n",f2);

    } while (fabs(f2) > 0.001);

    return 0;
}
```

```
////////////////////////////////
Trapizoidal method
////////////////////////////////

#include <stdio.h>
#include <stdlib.h>
#include <math.h>

#define func(x) (1/(x*x+1))

int main()
{
    float a,b,h,n,sum=0,x;

    printf("\nEnter the value of a and b: ");
    scanf("%f %f", &a, &b);

    printf("Enter the no of interval : ");
    scanf("%f",&n);

    h=(b-a)/n;

    for (int i=1; i<n ; i++)
    {
    x=a+i*h;
    sum=sum+func(x);
    }

    sum=h/2*(func(a)+func(b)+2*sum);
    printf("\n\nArea is : %f\n",sum);


    return 0;
}
```

```
/////////////////////////////
⅓ Rules
/////////////////////////////



#include <stdio.h>
#include <stdlib.h>
#include <math.h>

#define func(x) (1/(x*x+1))

int main()
{
    float a,b,h,n,sum=0,x;

    printf("\nEnter the value of a and b: ");
    scanf("%f %f", &a, &b);

    printf("Enter the no of interval : ");
    scanf("%f",&n);

    h=(b-a)/n;

    for (int i=1; i<n ; i++)
    {
    x=a+i*h;
    if(i%2==0)
        {
        sum=sum+2*func(x);
        }
    else
        {
            sum=sum+4*func(x);
        }
    }

    sum=h/3*(func(a)+func(b)+sum);
    printf("\n\nArea is : %f\n",sum);


    return 0;
}
```

```c
//////////////////////////////
⅜ rules
//////////////////////////////
#include <stdio.h>
#include <stdlib.h>
#include <math.h>

#define func(x) (1/(x*x+1))

int main()
{
    float a,b,h,n,sum=0,x;

    printf("\nEnter the value of a and b: ");
    scanf("%f %f", &a, &b);

    printf("Enter the no of interval : ");
    scanf("%f",&n);

    h=(b-a)/n;

    for (int i=1; i<n ; i++)
    {
    x=a+i*h;
    if(i%3==0)
        {
        sum=sum+2*func(x);
        }
    else
        {
            sum=sum+3*func(x);
        }
    }

    sum=(3*h)/8*(func(a)+func(b)+sum);
    printf("\n\nArea is : %f\n",sum);


    return 0;
}
```

```
/////////////////////////////////
Secant
/////////////////////////////////
#include <stdio.h>
#include <stdlib.h>
#include <math.h>

#define f(x) (x*x*x -4*x +1)

int main()
{
    int i = 0;
    float x0,x1,c,f0,f1,f2;

    printf("\nEnter the value of a and b: ");
    scanf("%f %f", &x0, &x1);

    do
    {
        f0=f(x0);
        f1=f(x1);
        c=((x0*f1)-(x1*f0))/(f1-f0);
        f2=f(c);
        f0=f1;
        f1=f2;
        x0=x1;
        x1=c;

        i++;
        printf("Iteration =%d\t",i);
        printf("a =%f\t",x0);
        printf("root =%f\t",c);
        printf("value of function =%f\n",f2);

    } while (fabs(c) > 0.001);

    return 0;
}
```