

Exercise 1(Bisection method)

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

#define E 0.00001

float f(float);

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

    i=0;
    while(f(i)*f(i+1)>0)
        i++;

    a = i;
    b = i+1;
    i=0;
    system("clear");
    printf("\nRoot lies between %g & %g",a,b);
    do
    {
        c=(a+b)/2.0;
        printf("\nIteration %d : %.4f",i++,c);
        if(f(c)*f(a) < 0)
            b = c;
        else
            a = c;
    }while(fabs(f(c)) > E);
    printf("\nApprox root: %.4f",c);
}

float f(float x)
{
    return(pow(x,3)-(2*x)-5);
}
```

Exercise 2(Trapezoidal Method) :

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

float f(float);

main()
{
```

```

float x0,xn,s,h;
int i,n;

printf("\nEnter the initial value: ");
scanf("%f",&x0);
printf("\nEnter the final value: ");
scanf("%f",&xn);
printf("\nEnter the sub intervals: ");
scanf("%d",&n);

h = (float) (xn-x0)/n;

s = f(x0)+f(xn);

for(i=1;i<n;i++)
    s = s+2*(h*f(x0+i));
s = s*(h/2.0);

printf("\nresult: %f",s);

}
float f(float x)
{
    return (1/(pow(x,2)+1));
}

```

Exercise 3(Euler method):

```

#include<stdio.h>

#define f(x,y) (x+y)

main()
{
    float x0,y0,xn,h;
    printf("\nEnter y0 = ");
    scanf("%f",&y0);
    printf("\nEnter x0 = ");
    scanf("%f",&x0);
    printf("\nEnter xn = ");
    scanf("%f",&xn);
    printf("\nEnter h = ");
    scanf("%f",&h);

    while(x0 < xn)
    {
        y0 = y0 + h*f(x0,y0);
        x0 = x0 + h;
    }
}

```

```
        printf("\n Y(%f) = %f",x0,y0);  
    }  
}
```