

```

//program for successive approximation method
#include "stdafx.h"
#include <iostream>
using namespace std;
#include <math.h>
//#define f(x) (x*x*x*x-x-10)
//#define g(x) (pow((x+10),0.25))
#define f(x) (x*x*x+x*x-1)
#define g(x) (pow((x+1),-0.5))
int a, b, x=0;
float x0=0, xn=0;
int main()
{
    if(f(x)<0.0)
    {
        while(x<30)
        {
            if(f(x)>0.0)
            {
                b = x--;
                a = x;
                break;
            }
            x++;
        }
        cout << " Interval : [" << a << "," << b << "]" ;
        x0 = (float)(a + b) / 2;
        for(int i=0;i<30;i++)
        {
            xn = g(x0);
            if (xn == x0)
                break;
            x0 = xn;
            cout << "\n Step " << i+1 << "\t Root=" << xn;
        }
    }
    else
    {
        while(x<30)

```

```

        {
            if(f(x)<0.0)
            {
                a = x--;
                b = x;
                break;
            }
            x++;
        }
        cout << " Interval : [" << a << "," << b << "]"<< endl;
        x0 = (float)(a + b) / 2;
        for (int i = 0; i<30; i++)
        {
            xn = g(x0);
            if (xn == x0)
                break;
            x0 = xn;
            cout << "\n Step " << i + 1 << "\t Root=" << xn;
        }
    }
    return 0;
}

```

```

C:\Windows\system32\cmd.exe
Interval : [0,1]
Step 1 Root=0.816497
Step 2 Root=0.741964
Step 3 Root=0.757671
Step 4 Root=0.754278
Step 5 Root=0.755007
Step 6 Root=0.75485
Step 7 Root=0.754884
Step 8 Root=0.754876
Step 9 Root=0.754878
Step 10 Root=0.754878
Step 11 Root=0.754878Press any key to continue . . .

```