```
#include<bits/stdc++.h>
using namespace std;
#define ESP 0.000001
#define f(x) (x*x+2*x-2)
#define g(x) (1-(0.5*(x*x)))
double arr[100000];
double aitken(double a,double b,double c)
{
    return (a-(pow(a-b,2)/(a-2*b+c)));
}
int main()
{
    cout<<"Enter initial Value: ";
    int x1,d;
    cin>>x1;
    cout<<"How Many Decimal Point You Want? \n";
    cin>>d;
    double error=1;
    double f1=x1;
    double ans=f1;
    double f2=0;
    arr[0]=x1;
    cout<<"Approximate value: ";
    cout<<fixed<<setprecision(d)<<arr[0]<<endl;
    int val=0;
    for(int i=1;;i++)
    {
        if(i%3==0)
        {
            //cout<<arr[i-1]<<" "<<arr[i-2]<<" "<<a
rr[i-3]<<endl;
            arr[i]=aitken(arr[i-1],arr[i-2],arr[i-3
]);
            f2=arr[i];
            ans=f2;
            cout<<"Approximate value: ";
            cout<<fixed<<setprecision(d)<<arr[i]<<e
ndl;
        }
        else
        {
            f2=g(arr[i-1]);
```

```
            arr[i]=f2;
            ans=f2;
            cout<<"Approximate value: ";
            cout<<fixed<<setprecision(d)<<arr[i]<<e
ndl;
        }
        error=abs(f2-f1);
        f1=f2;
        val=i;
        if(error<ESP)
            break;
        if(i==5000)
        {
        cout<<"Divergent\n";return 0;
        }
    }
    //cout<<val<<endl;
    cout<<"\n\nFinal Root: "<<fixed<<setprecision(d
)<<ans<<endl;

}
```