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Write a C program find the sum of series ; $\text{Sum} = X - \frac{X^3}{3} + \frac{X^5}{5} - \frac{X^7}{7} + \dots$ N terms

Observations:

1. Enter the value of X 2

How many step 2

$$\text{Sol} = 2 - \frac{2^3}{3} = 2 - \frac{8}{3} = 2 - 2.666 = -0.666$$

Sum is -0.666667

2. Enter the value of X 2

How many step 3

$$\text{Sol} = 2 - \frac{2^3}{3} + \frac{2^5}{5} = 2 - \frac{8}{3} + \frac{32}{5} = 2 - 2.666 + 6.4 = 5.733$$

Sum is 5.733333

3. Enter the value of X 3

How many step 2

$$\text{Sol} = 3 - \frac{3^3}{3} = 3 - \frac{27}{3} = 3 - 9 = -6$$

Sum is -6.000000

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Program:

```
#include<stdio.h>
#include<conio.h>
float power(float a, int b);
float fact(int a);
void main()
{
int n,i,v=3,sign=-1;
    float x,sum,prod,f;
    clrscr();
    printf("\n Enter the value of X ");
    scanf("%f",&x);
    printf("\n How many step ");
    scanf("%d",&n);
    sum=x;
    for(i=2;i<=n;i++)
    {
        prod=power(x,v);
        f=fact(v);
        sum=sum+(sign)*prod/f;
        v=v+2;
        sign=(-1)*sign;
    }
    printf("\n Sum is %f",sum);
    getch();
}
float power(float a, int b)
{
int i;
    float v=1;
    for(i=1;i<=b;i++)
        v=v*a;
```

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```
        return(v);
    }
float fact(int a)
{
    int i;
        float f=1;
        for(i=1;i<=a;i++)
            f=f*i;
        return(f);
}
```