Q:20:: Write a c++ program that evaluate the following series :

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \cdots$$

Answer: code link

```
1
       #include<iostream>
 2
       #include<math.h>
 3
       #include<iomanip>
 4
       using namespace std;
 5
     float dg rd(float x) {
 6
           x=x*(M PI/180);
 7
           return x;}
     int factorial(int f) {
 8
 9
           int temp=1, j=2;
10
          while(j<=f){
11
               temp=temp*j;
12
               j++;}
13
           return temp;}
     int main() {
14
15
          int i, sign, k=1, f, n;
16
           float x,x1,x2,sum=0.0,term;
17
           cout<<"Enter an angle in degree : ";
18
           cin>>x1;
19
           x2=x1;
20
           x=dg rd(x2);
21
           cout<<"Enter the nth term : ";
22
23
           for(i=1;;i=i+2){
24
             if(k%2==0)
25
                  sign=-1;
              else
26
27
                  sign=1;
28
              f=factorial(i);
29
              term=(pow(x,i))/f;
30
              sum=sum+(sign*term);
31
              if(k==n)
32
              break;
33
              f=0;
34
              term=0.0;
35
           std::cout<<std::setprecision(6)<<"sin( "<<xl<<" ) : "<<sum<<endl;
36
37
           return 0;}
Enter an angle in degree : 120
```

Enter the nth term : 6 sin(120) : 0.866023

Q:20:: Write a c++ program that evaluate the following series :

$$\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots$$

Answer: code link

```
1
       #include<iostream>
       #include<math.h>
 3
       #include<iomanip>
 4
       using namespace std;
 5
     float dg rd(float x) {
 6
           x=x*(M PI/180);
 7
           return x;}
 8
     int factorial(int f) {
 9
           int temp=1, j=2;
10
           while(j<=f){
11
                temp=temp*j;
                j++;}
12
13
           return temp;}
     ☐int main(){
14
15
           int i, sign, k=1, f, n;
16
           float x,x1,x2,sum=0.0,term;
17
           cout<<"Enter an angle in degree : ";</pre>
18
           cin>>xl;
19
           x2=x1;
20
           x=dg rd(x2);
21
           cout<<"Enter the nth term : ";
22
           cin>>n;
           for(i=0;;i=i+2){
23
24
              if(k%2==0)
25
                   sign=-1;
26
              else
27
                   sign=1;
28
              f=factorial(i);
29
              term=(pow(x,i))/f;
30
              sum=sum+(sign*term);
              if(k==n)
31
32
               break;
              f=0;
33
34
              term=0.0;
35
36
           std::cout<<std::setprecision(6)<<"cos( "<<xl<<" ) : "<<sum<<endl;
37
           return 0;}
```

```
Enter an angle in degree : 120
Enter the nth term : 7
cos( 120 ) : -0.5
```