```
1. Ans:
Code:
#include<bits/stdc++.h>
using namespace std;
int main()
{
  long long int n=5;
  double x[n]={1891,1901,1911,1921,1931};
  double y[n][n];
  y[0][0]=46;
  y[1][0]=66;
  y[2][0]=81;
  y[3][0]=93;
  y[4][0]=101;
  cout << "\nX\tY\tdel\t";
  for(int i=1; i<n; i++){
    if(i>=2){
       cout<<"del^"<<i<<"\t";
    for(int j=0; j<n-i; j++)
       y[j][i]=y[j+1][i-1]-y[j][i-1];
    }
  }
  cout<<endl;
  for(int i=0; i<n; i++)
    cout<<x[i]<<"\t";
    for(int j=0; j<n-i; j++)
       cout << y[i][j] << "\backslash t";
    cout<<endl;
  }
  cout<<endl;
}
```

Output:

```
Υ
                 del
                          del^2
                                  del^3
                                           del^4
1891
                 20
                          -5
                                  2
                                           -3
        46
1901
        66
                 15
                          -3
                                   -1
1911
        81
                 12
                          -4
1921
        93
                 8
        101
1931
```

```
2.Ans:
Code
#include<bits/stdc++.h>
using namespace std;
int main()
{
  double x[5]={0,1,2,3,4};
  double y[5]={1,5,10,22,38};
  int m=sizeof(x)/sizeof(x[0]);
  double x_square[m],sum_x_square=0.0;
  double xy[m],sum_xy=0;
  for(int i=0;i<m;i++)
  {
    x_square[i]=pow(x[i],2);
    sum_x_square+=x_square[i];
    xy[i]=x[i]*y[i];
    sum_xy+=xy[i];
  }
  cout<<"sum of x^2 = "<<sum_x_square<<"\nsum of xy = "<<sum_xy<<endl;
}
```

Output:

```
G:\191311102_labfinal_q2.exe

sum of x^2 = 30

sum of xy = 243

Process returned 0 (0x0) execution time : 1.861 s

Press any key to continue.
```

```
3. Ans:
Code
#include<bits/stdc++.h>
using namespace std;
int main()
{
  int i,j,n=5;
  double x_arr[6]={5,7,11,13,17};
  double y_arr[6]={150,392,1452,2366,5202};
  double X=10;
  double upper=1,lower=1,sum=0,term;
  for(i=1;i<=n;i++){
    upper=1,lower=1;
    for(j=1;j<=n;j++){
      if(j!=i){
        upper*=(X-x_arr[j]);
        lower*=(x_arr[i]-x_arr[j]);
      }
    }
    term=(upper*(y_arr[i])/(lower*1.0));
    sum+=term;
  }
  cout<<"value at "<<X<<" is "<<sum<<endl;
}
```

Output:

G:\191311102_lab_final_q3.exe

value at 10 is 1100

Process returned 0 (0x0) execution time: 1.790 s Press any key to continue.