NEWTON FORWARD

Q1)Find the value of sin 54 from the given Dataset.

Q	45	50	55	60
Sin Q	0.707	0.766	0.8192	0.866

INPUT:

```
clc
clear all
close all
X =input('Enter the Value of X:');
x=[45,50,55,60];
y=[0.707,0.766,0.8192,0.866];
n=length(x);
%use to create blank table
D=zeros(n,n);
p=0;
D(:,1)=y';
for j=2:n
    for i=j:(n-j+1)
        D(i,j) =D(i+1 , j-1)-D(i,j-1);
    end
end
h=x(2)-x(1);
u=(X-x(1))/h;
A=y(1);
G=u;
for k=1:n-1
    A=A+G*D(1,k+1);
    G=((u-k)/(k+1))*G;
end
fprintf('value of Y(%f)=%f',X,A);
```

OUTPUT:

Enter the Value of X:54

X =

   54

x =

   45   50   55   60

y =

   0.7070   0.7660   0.8192   0.8660

n =

   4

D =

```
0.7070    0    0    0
0.7660    0    0    0
0.8192    0    0    0
0.8660    0    0    0
```

D =

```
0.7070    0        0    0
0.7660    0.0532   0    0
0.8192    0        0    0
0.8660    0        0    0
```

D =

```
0.7070    0        0    0
0.7660    0.0532   0    0
0.8192    0.0468   0    0
0.8660    0        0    0
```

h =

   5

u =

   1.8000

A =

   0.7070

A =

   0.7070

G =

   0.7200

A =

   0.7070

G =

-0.0480

A =

   0.7070

G =

   0.0144

value of Y(54.000000)=0.707000>>

Q2)Find the value of sin 54 from the given datasets.

X	0	1	2	3	4
Y	1	7	23	54	109

OUTPUT:

X =

   0.5000

A =

   1

A =

   1

G =

   -0.1250

A =

   1

G =

   0.0625

A =

   1

G =

  -0.0391

A =

  1

G =

  0.0273

value of Y(0.500000)=1.000000

NEWTON BACKWORD:

Q3) Consider Following Tabular Values Determine y(210).

X	50	100	150	200	250
Y	618	724	805	906	1032

INPUT:

```
clc
clear all
close all
X =input('Enter the Value of X:');
x=[50,100,150,200,250];
y=[618,724,805,906,1032];
n=length(x);
%use to create blank table
D=zeros(n,n);
D(:,1)=y';
for j=2:n
    for i=j:n
        D(i,j) =D(i ,j-1)-D(i-1,j-1);
    end
end
h=x(2)-x(1);
u=(X-x(n))/h;
A=y(n)
G=u;
for k=1:n-1
    A=A+G*D(n-k,k+1)
    G=((u+k)/(k+1))*G
end
fprintf('value of Y(%f)=%f\n',X,A);
```

OUTPUT:

Enter the Value of X:210

A =

    1032

A =

 951.2000

G =

  0.7200

A =

 933.2000

G =

 -0.6720

A =

 933.2000

G =

  0.6384

A =

 933.2000

G =

 -0.6129

value of Y(210.000000)=933.200000

Q4) X= [0 ,1,2,3,4]
    Y = [1,2,4,8,16]
    X=2.5

OUTPUT:

Enter the Value of X:2.5

A =

  16

A =

  10

G =

  0.3750

A =

  10.3750

G =

  0.0625

A =

  10.3750

G =

  0.0234

A =

  10.3750

G =

  0.0117

value of Y(2.500000)=10.375000