FORWARD

```
format short;

clear all;

clc;

x=[0 0.001 0.002 0.003 0.004 0.005]

y=[1.121 1.123 1.1255 1.127 1.128 1.1285]

X=input('enetr thee value of x which u w=need to find');

n=length(x);

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

%disp('table is',D);

h=x(2)-x(1);

u=(X-x(1))/h;

G=u;

A=y(1); %want to initialise from y1

for k=1:n-1

    A=A+G*D(1,k+1);

    G=(u-k)/(k+1)*G;

end

fprintf('the value is %f %4f',X,A);
```

BACKWARD

```
format short;

clear all;

clc;
```

```
x=[0 0.001 0.002 0.003 0.004 0.005]

y=[1.121 1.123 1.1255 1.127 1.128 1.1285]

X=input('enetr thee value of x which u w=need to find');

n=length(x);

D=zeros(n,n);

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

%disp('table is',D);

h=x(2)-x(1);

u=(X-x(1))/h;

G=u;

A=y(1); %want to initialise from y1

for k=1:n-1

   A=A+G*D(1,k+1);

   G=(u-k)/(k+1)*G;

end

fprintf('the value is %f %4f',X,A);
```

LANGRANGES DEFINE

```
function y0=lagranges_interp(x,y,x0) %function define

y0=0

n=length(x);

for j=1:n

   t=1

   for i=1:n

      if i~=j
```

```
        t=t*(x0-x(i))/(x(j)-x(i));
     end
   end
  y0=y0+t*y(j);
end
```

LANGRANGES CALL

```
clc;
clear all;
close all;
x=[0 1.2 2.4 3.7]
y=[3.41 2.68 1.37 -1.18]
x0=1.30
yn=lagranges_interp(x,y,x0) %function_call
```

SIMSON 1/3

```
format short;
 clear all;
 clc
f=@(x)1./(x);
 a=input('enter lower limit');
 b=input('enter upper limit');
 n=input('enter th no of interval');
h=(b-a)/n;
if rem(n,2)==1
   fprintf('\n enetr valid no');
   n=input('\n enter n as even number');
 end
k=1:1:n;
s=f(a+k.*h);
se=sum(s(2:2:n));
```

```
so=sum(s(1:2:n-1));

out=(h/3).*(f(a)+2.*se+4.*so+f(b));

fprintf('the value of integration is %f \n',out);
```

WEIDELS

```
format short

clear all;

clc;

f=@(x)1./(x);

a=input('enter lower limit');

b=input('enter upper limit');

n=input('enter th no of interval');

h=(b-a)/n;

s=f(a)+f(b);

for i=2:2:n-2

    s=s+f(a+i.*h); y1=f(a+h)

end

for i= 1:4:n-1

    s=s+5*f(a+i.*h);

end

for i=3:3:n-3

    s=s+6*f(a+i.*h);

end

i=(3*h*s)/10;

fprintf('ansr is %f',i);
```

TRAPEZOIDAL WITH VALUE

```
clc;

clear all;

close all;

x=[-4 -3 -2 1 0 1 2]
```

```matlab
y=[0 4 5 3 10 11 2]
l=length(x);
n=6;
h=((x(l)-x(1))/n);
s=0.5*(y(1)+y(l));
for i=2:l-1
    s=s+y(i);
end
s=s.*h;
fprintf('thre required value is %4f \n',s);
```

TRAPEZOIDAL WITH FUNCTION

```matlab
format short
 clear all;
 clc
 f=@(x)1./(x);
 a=input('enter lower limit');
 b=input('enter upper limit');
 n=input('enter th no of interval');
 h=(b-a)/n;
 i=1:1:n-1
s=f(a+i.*h);

 out=(h./2).*(f(a)+2.*sum(s)+f(b));
 fprintf('the value of integration is %f \n',out);
```

GAUSS WITH ELIMINATION

```matlab
format short;
clear all;
clc;
```

```matlab
info=[2 3 1;1 2 3;3 1 2];

b=[9;6;8];

a=[info b];

for i=1:size(a,1)

    for j=i+1:size(a,1)

        key1=a(j,i)./a(i,i);

        a(j,:)=a(j,:)-key1.*a(i,:);

    end

end

x=zeros(1,size(info,2));   %creating a 1 row 4 column matrix having 00

for i=size(a,1):-1:1

    out=sum(a(i,i+1:end-1).*x(i+1:end));

    x(i)=(a(i,end)-out)./a(i,i);

end

fprintf('ansr is %f',x);
```

GAUSS SEIDAL

```matlab
clc ;

clear all;

a=[27 6 -1; 6 15 2; 1 1 54];

b=[85;72;110];

aug=[a b];

n=length(aug);

iterations=input('enter the number of iterrations');

x=zeros(n-1,1);

for i =1:iterations

    for j= 1:n-1

        x(i)=(aug(j,n)-aug(j,[1:j-1 j+1:n-1]))*([1:j-1 j+1:n+1],1)/aug(i,j));

    end

end

disp(x)
```