

Q1 find sum $= \sum_{k=1}^n \left(\frac{3}{x}\right)^k$

```
clear all
clc
close all
n=12;
k=1:n;
x=4;
for i=1:length(k);
    sum=(3/x)^k(i);
end
disp(sum)
```

Q2 Newton question

```
function [x] = Newton(f,fd,x0,n);
f=@(x)x^3+x;
fd=@(x)3*x^2+1;
x0=2;
x=x0;
n=4;
for k=1:n;
    x=x-f(x)/fd(x)
end
end
```

Q3 simpson 1/3 rule

```
f=@(x) sqrt(x);
a=0;
b=5;
n=18;
h=(b-a)/n;
sum1=0;
sum2=0;
for k=1:n-1;
    x(k)=a+k*h;
    if (rem(k,2)==0);
        sum1=sum1+f(x(k));
    else
        sum2=sum2+f(x(k));
    end
end
Area=h/3*(f(a)+f(b)+2*sum1+4*sum2)
```

Q4 simpson 3/8 rule

```
f=@(x) sqrt(x);
a=0;
b=5;
n=18;
h=(b-a)/n;
sum1=0;
```

```

sum2=0;
for k=1:n-1;
    x(k)=a+k*h;
    if (rem(k,3)==0);
        sum1=sum1+f(x(k));
    else
        sum2=sum2+f(x(k));
    end
end
Area=3*h/8*(f(a)+f(b)+2*sum1+3*sum2)

```

Q5 Trapezoidal rule

```

clear all
close all
clc
f=@(x)x^4;
a=0;
b=2;
n=6;
h=(b-a)/n;
sum=0;
for k=1:n-1;
    x(k)=a+k*h;
    y(k)=f(x(k));
    sum=sum+y(k);
end
Area=h/2*(f(a)+f(b)+2*sum)

```

Q6 factorial using for loop

```

a=input('Emter a number')
fact=1;
if a<0;
    fprintf('The numbe is negative')
else
    for i=1:a;
        fact=fact*i
    end
end
end

```

Q7 factorial using while loop

```

clear all
clc
close all
n=4;
f=n;
while n>1;
    n=n-1;
    f=f*n;
end
disp(f)

```

Q8 calculate Riemann sum $\int_0^2 e^{x^2} dx$ for n=20

```
clc
clear all
close all
f=@(x)exp(x^2);
a=0;
b=2;
n=20;
h=(b-a)/n;
value=0;
for k=1:n;
    x(k)=a+k*h;
    value=value+f(x(k));
end
R=value*h
```

Q9 Sum and Prod

```
function [ sum prod ] = examquestion( s,p )
clc
clear all
close all
s=input('s')
p=input('p')
sum=s+p
prod=s*p
end
```

Q10 Ode45 command

```
clc
clear all
close all
yprime=@(t,y)2*t;
tspan=[0 5];
y0=0;
[t,y]=ode45(yprime,tspan,y0)
```

Q11 Solve differential equation by dsolve command

```
clc
clear all
close all
syms y(t)
ode=diff(y,t)+5*y==12;
cond=y(0)==10;
solve=dsolve(ode,cond)
```

Q12 solve system of linear equation by solve command

```
clc
clear all
close all
equ1='2*x+y+z=2';
equ2='-x+y-z=3';
equ3='x+2*y+3*z=-10';
[x,y,z]=solve(equ1,equ2,equ3)
```

Q13 solve system of linear equation

```
clc
clear all
close all
A=[2 1 1;-1 1 -1;1 2 3];
B=[2;3;-10];
C=inv(A);
solve=C*B
```

Q14 Write argument matrix and find rref

```
clc
clear all
close all
A=[8 1 6;3 5 7;4 9 2]
b=[1;1;1]
Ab=[A b]
solve=rref(Ab)
```

Q15 Matrix multiplication

```
clc
clear all
close all
A=sym([3/11 2/5 4/7;2/3 4/5 6/7;7/9 8/6 9/4])
B=sym([1/3 8/9 4;2/9 3/7 9/6;6 7/4 5/7])
mult=A*B
iver=inv(A)
```