# Question 01

## Code

clc

clear all

% a

syms x

f=@(x)5\*x^4 -3\*x^3+4\*x^2 +8\*x-3;

diff\_f=@(x)20\*x^3 - 9\*x^2 + 8\*x + 8;

x=.7;

iter=[];

exect=0.3264;

err=[];

for i=1:3

iter=[iter (x-(f(x)/diff\_f(x)))];

x=iter(i);

err= [err abs((exect-x)/x)\*100];

end

iter

err

% b

x=0.7;

x1=0.4;

f1=@(x1)5\*x1^4 -3\*x1^3+4\*x1^2 +8\*x1-3;

second\_err=[];

second\_iter=[];

for i=1:3

second\_iter=[second\_iter x- (f(x)\*(x-x1))/(f(x)-f(x1))];

x=second\_iter(i);

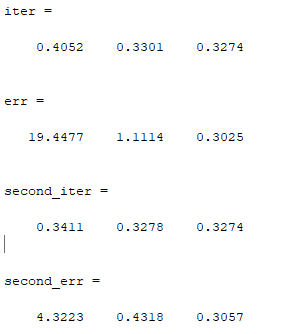
second\_err= [second\_err abs((exect-x)/x)\*100];

end

second\_iter

second\_err

## Output



# Question 02

## Code

clc

clear all

xi=0;

xu=2;

f1=@(x1)1.5\*x1^4 -3.2\*x1^3+2.4\*x1^2 +0.8\*x1 + 15;

f2=@(x2)1.5\*x2^4 -3.2\*x2^3+2.4\*x2^2 +0.8\*x2 + 15;

d=((sqrt(5)- 1)/2)\*(2-0)

x1=xi+d;

x2=xu+d;

f1\_1=f1(x1)

f2\_1=f2(x2)

% second iteration

d=((sqrt(5)- 1)/2)\*(d-0)

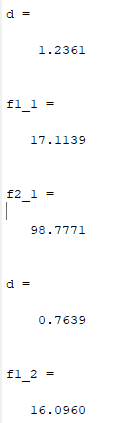
x1=xi+d;

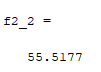
x2=xu+d;

f1\_2=f1(x1)

f2\_2=f2(x2)

## Output





# Question 3

# Code

clc

clear all

A=[1 1 1 0; 2 -2 -5 0; 3 0 1 1; 4 -2 -3 1];

B=[6;13;13;1];

output=inv(A)\*B;

x=output(1)

y=output(2)

z=output(3)

w=output(4)

# Output

