Sample Question for fourier series

Q1 Draw graph of the following function and its fourier series (with n=50 and n=10)

$$f(x) = x^3 , -\pi \le x \le \pi$$

Code :

```
clc
L=%pi
x=-L:0.01:L;
f=x^3; //define function f(x)
a0=(1/(2*L)*inttrap(x,f)); //define fourier constant a_0
for n=1:50
f1=f.*cos(%pi*n*x*(1/L));
a(n)=(1/L)* inttrap(x,f1); //define fourier constant a_n
end;
for n=1:50
f2=f.*sin(%pi*n*x*(1/L));
b(n)=(1/L)* inttrap(x,f2); //define fourier constant b_n
end;
subplot(2,1,1), plot(x,f); // subplot(2,1,1)-in display 2 rows &
1column,'1'represnts first graph  of function;
u=0; y=0;
for n=1:50
u= a(n)*cos(%pi*n*x*(1/L))+ b(n)* sin(%pi*n*x*(1/L));
y=y+u;
end;
fs=y+ a0;
subplot(2,1,2), plot(x,fs); // subplot(2,1,2)-in display 2 rows &
1column,'2'represnts second graph of fourier series
title('ABC123456 GRAPH1if n=50','fontsize',5)
```
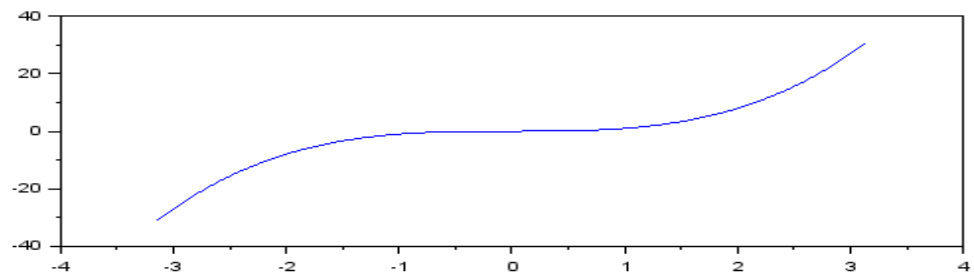
OUTPUT: (if n=50)
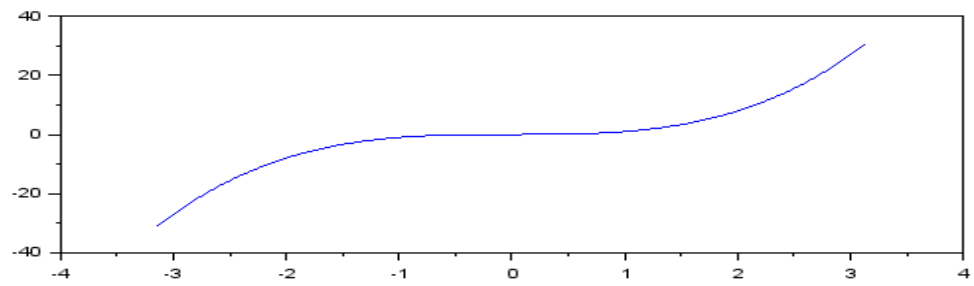
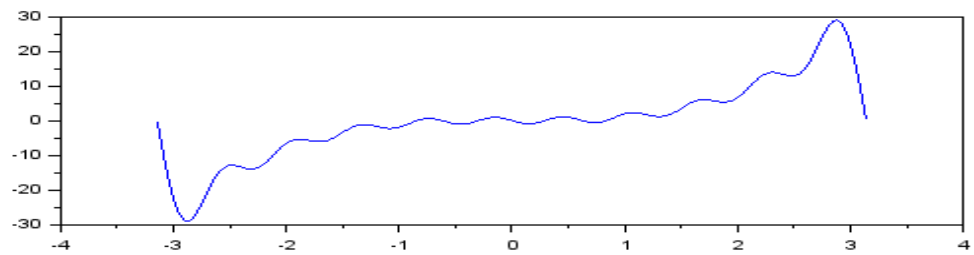ABC123456 GRAPH1if n=50
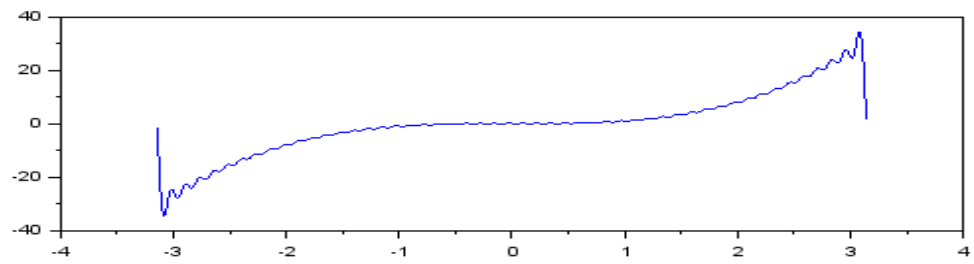
OUTPUT: (if n=10)

ABC123456 GRAPH1if n=10

Instructions

Make a word file in the following manner and upload the file in LMS Assignment.

Steps	Details	Marks (25)
1 (on the top of page)	Name Batch & Roll no Tutorial Name and date	1
2	File name P2-RollNo-Batch no_Name Eg. P2-16010420038-A2-Paarth	1
3	Question1 Code on Scinotes(n=50) Output(n=50) Code on Scinotes(n=10) Output(n=10) Display of output in the meeting chat	1 2 2 2 2 2
4	Question2 Code on Scinotes(n=50) Output(n=50) Code on Scinotes(n=10) Output(n=10) Display of output in the meeting chat	1 2 2 2 2 2
5	Submission during tutorial time	1