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1 %-----Code Start-----
2 % Alan Chen
3 % Understanding Maclaurin Series for  $f(x) = \sin(x)$ 
4 % Graphing for any given nth term
5 % 7/12/2019
6
7 clear
8 clc
9 xmin = 0;
10 xmax = input("What is the x max for graph? Ex. Input 5 would graph function from 0 ↵
to 5 horizontally\n");
11 nterm = input("Number of terms, n, in sum representation of the Maclaurin ↵
Series\n");
12 x = linspace(xmin,xmax,xmax*10);
13 y = sin(x);
14 yn = 0;
15 table=[];
16 for n = 0 : nterm-1
17     yn = yn + ((-1)^n)*((x).^(2*n+1))/factorial(2*n + 1);
18     plot(x,yn,'LineWidth',3)
19     table = [table num2str(n+1)+" term"];
20     hold on;
21 end
22 plot(x,y,'LineWidth',8)
23 hold off;
24 xlim([xmin xmax])
25 ylim([-2.5 2.5])
26 xlabel('x')
27 ylabel('sin(x)')
28 set(gca,'FontSize',15)
29 title(['\fontsize{16}Maclaurin Series for {'...
30 '\color{rgb}{0 .5 .5} $f(x) = \sin(x)$  with ',num2str(nterm),'\fontsize{16} number of ↵
terms '])
31 table = [table "sin(x)"];
32 legend(table);
33 %-----Code End-----

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