Solving DE using Power Series Method

EXPERIMENT - 6

CODE: -

clear all

clc

syms x c\_0 c\_1 c\_2 c\_3 c\_4 c\_5

p1x = input('The coefficient of D2y :');

p2x = input('The coefficient of Dy :');

p3x = input('The coefficient of y :');

c = [c\_0,c\_1,c\_2,c\_3,c\_4,c\_5];

y1 = sum(c.\*(x).^(0:5));

y=y1;

dy=diff(y);

d2y = diff(dy);

ode=p1x\*d2y+p2x\*dy+p3x\*y

ps=collect(ode,x);

d = coeffs(ps,x);

[c\_2,c\_3,c\_4,c\_5] = solve(d(1),d(2),d(3),d(4),c\_2,c\_3,c\_4,c\_5);

z = subs(y);

disp(' The general solution of the given ode around x=0 is given by: ')

disp(z)

i1 = input('enter y(0) :');

i2 = input('enter Dy(0):');

zz = subs(z,[c\_0,c\_1],[i1,i2]);

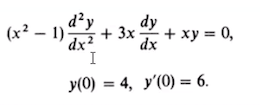
disp(' The Particular solution of the given ode around is given by: ')

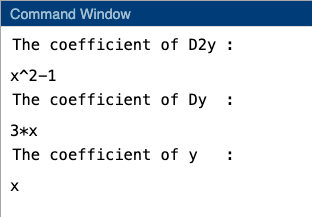
disp(zz)

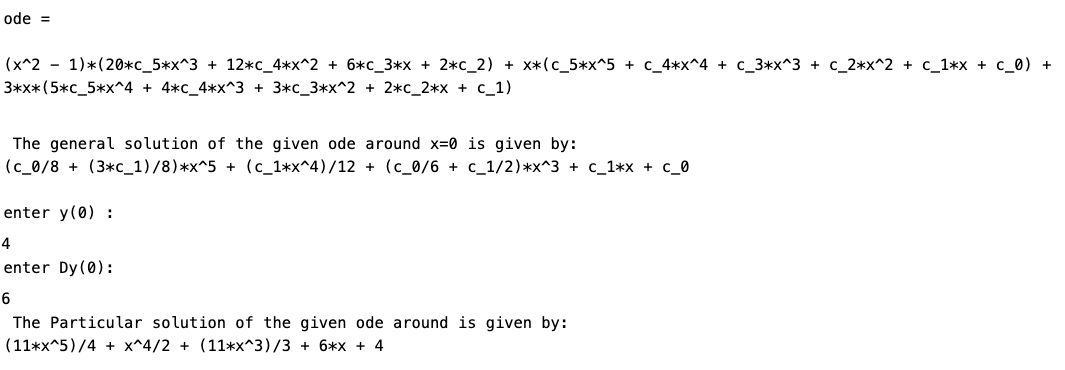
ezplot(zz,[-4 4])

Input 1: -

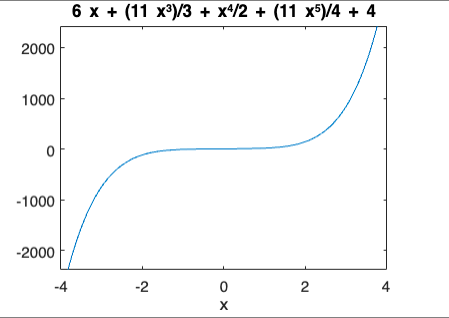
Question 1: -







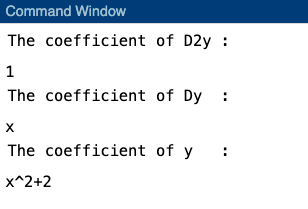
Graph: -

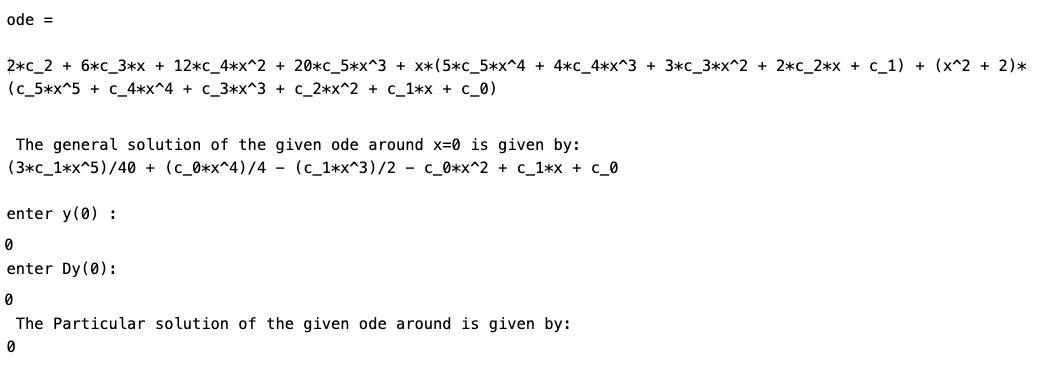


Input 2: -

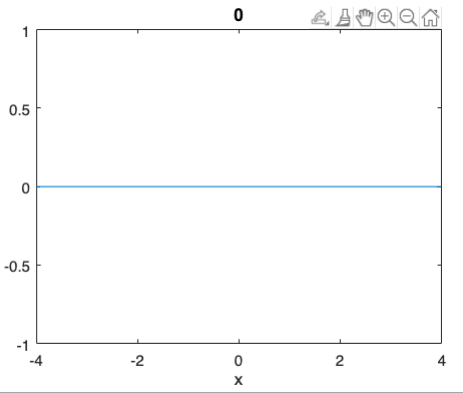
Question 2: -







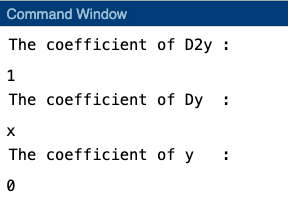
GRAPH: -

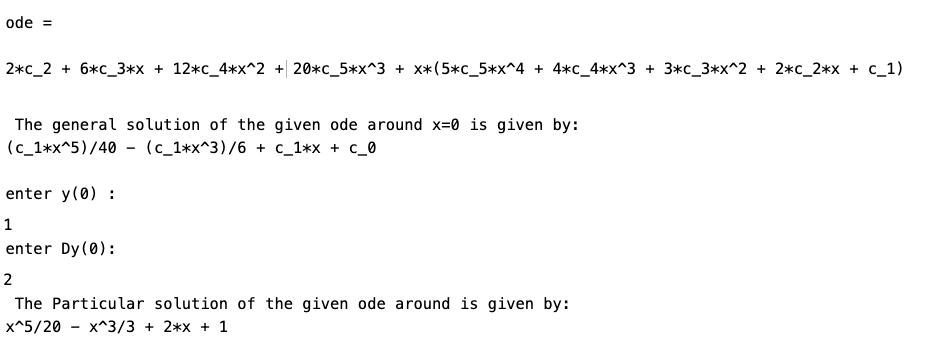


Input 3: -

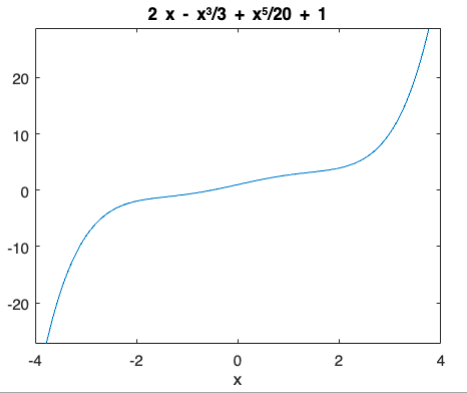
Question 3: -







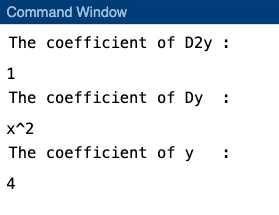
GRAPH: -

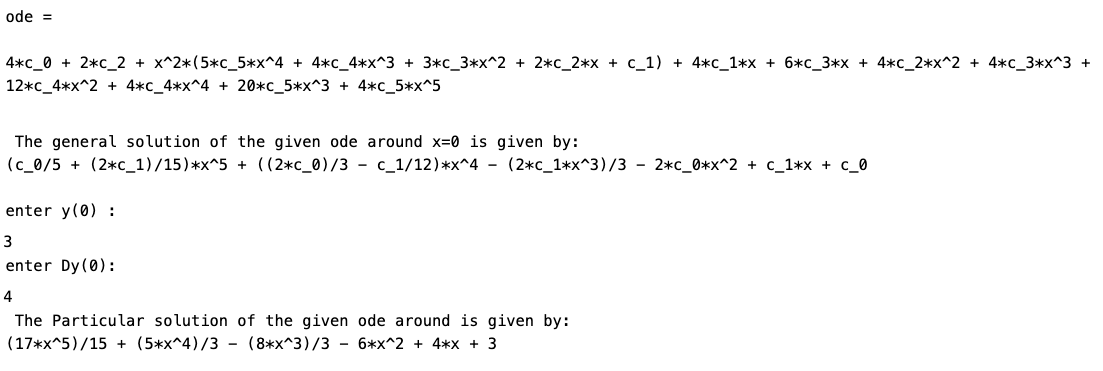


Input 4: -

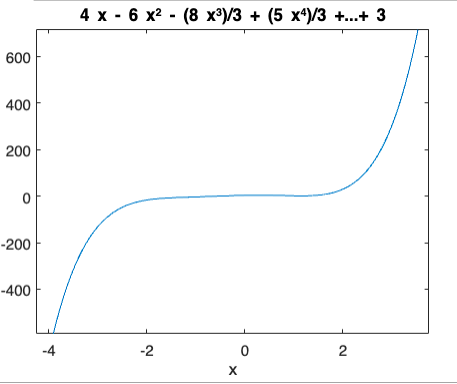
Question 4: -







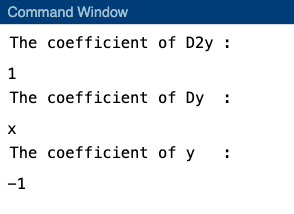
GRAPH: -

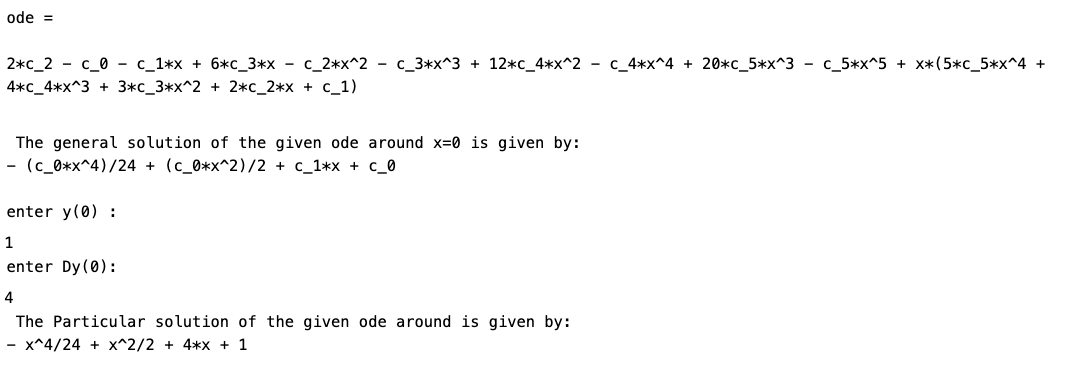


Input 5: -

Question 5: -







GRAPH: -

