

NAME MADHAV ANAD

19BCE0712

LAB EXP NO 8

HOMEPLOTSAPPSEDITORPUBLISHFILE VERSIONSVIEW

←→📁📄📄📄 / > MATLAB Drive >

MADhav.m x +

CURRENT FOLDER

1 - clc
2 - clear all
3 - syms a0 a1 a2 a3 x
4 - y=a0+a1*x+a2*x^2+a3*x^3
5 - dy=diff(y);
6 - d2y=diff(dy);
7 - gde=collect(d2y+x*y,x);
8 - cof=coeffs(gde,x);
9 - A2=solve(cof(1),a2);
10 - A3=solve(cof(2),a3);
11 - y=subs(y,{a2,a3},{A2,A3});
12 - y=coeffs(y,[a1 a0]);
13 - disp('solution is')
14 - disp(['y=A(',char(y(1)),'+...)+B(',char(y(2)),'+...'])
15

WORKSPACE

COMMAND WINDOW

y =

a3*x^3 + a2*x^2 + a1*x + a0

solution is
y=A(1 - x^3/6+...)+B(x+...
>>

NAME MADHAV ANAD

19BCE0712

LAB EXP NO 8

HOME

PLOTS

APPS

EDITOR

PUBLISH

FILE VERS

← → ↗ ↘

/ > MATLAB Drive >

MADhav.m x +

CURRENT FOLDER

1 - clc

2 - clear all

3 - syms a0 a1 a2 a3 x

4 - y=a0+a1*x+a2*x^2+a3*x^3

5 - dy=diff(y);

6 - d2y=diff(dy);

7 - gde=collect(d2y+(x^2)*y,x);

8 - cof=coeffs(gde,x);

9 - A2=solve(cof(1),a2);

10 - A3=solve(cof(2),a3);

11 - y=subs(y,{a2,a3},{A2,A3});

12 - y=coeffs(y,[a1 a0]);

13 - disp('solution is')

14 - disp(['y=A(',char(y(1)),'+...')+B(',char(y(2)),'+...'])

15

WORKSPACE

COMMAND WINDOW

y =

a3*x^3 + a2*x^2 + a1*x + a0

solution is

y=A(1+...)+B(x+...

>>

NAME MADHAV ANAD

19BCE0712

LAB EXP NO 8

HOME

PLOTS

APPS

EDITOR

PUBLISH

FILE VERSIONS

←

→

📁

📄

🌐

/ > MATLAB Drive >

CURRENT FOLDER

WORKSPACE

MADhav.m x +

1 - clc
2 - clear all
3 - syms a0 a1 a2 a3 x
4 - y=a0+a1*x+a2*x^2+a3*x^3
5 - dy=diff(y);
6 - d2y=diff(dy);
7 - gde=collect(d2y+x*dy+y,x);
8 - cof=coeffs(gde,x);
9 - A2=solve(cof(1),a2);
10 - A3=solve(cof(2),a3);
11 - y=subs(y,{a2,a3},{A2,A3});
12 - y=coeffs(y,[a1 a0]);
13 - disp('solution is')
14 - disp(['y=A(',char(y(1)),'+...)+B(',char(y(2)),'+...'])
15

COMMAND WINDOW

y =

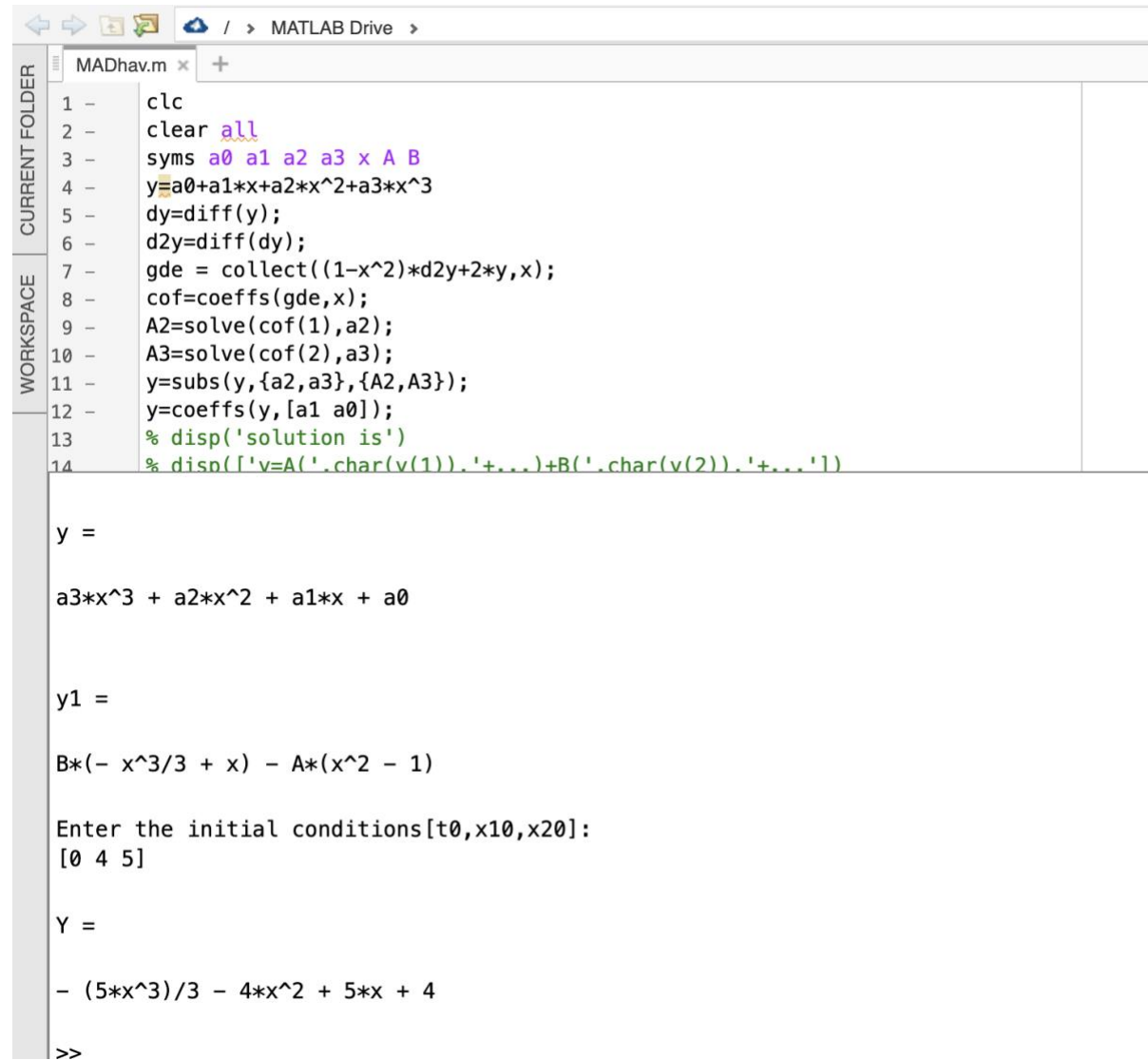
a3*x^3 + a2*x^2 + a1*x + a0

solution is
y=A(1 - x^2/2+...)+B(x - x^3/3+...
>>

NAME MADHAV ANAD

19BCE0712

LAB EXP NO 8



The image shows a MATLAB IDE window with a script named 'MADhav.m' open. The script defines a differential equation and solves it using symbolic computation. The results of the script are displayed in the command window below the editor.

```
1 - clc
2 - clear all
3 - syms a0 a1 a2 a3 x A B
4 - y=a0+a1*x+a2*x^2+a3*x^3
5 - dy=diff(y);
6 - d2y=diff(dy);
7 - gde = collect((1-x^2)*d2y+2*y,x);
8 - cof=coeffs(gde,x);
9 - A2=solve(cof(1),a2);
10 - A3=solve(cof(2),a3);
11 - y=subs(y,{a2,a3},{A2,A3});
12 - y=coeffs(y,[a1 a0]);
13 - % disp('solution is')
14 - % disp(['v=A(' .char(v(1)).'+...)+B(' .char(v(2)).'+...')])
```

y =

$$a3*x^3 + a2*x^2 + a1*x + a0$$

y1 =

$$B*(-x^3/3 + x) - A*(x^2 - 1)$$

Enter the initial conditions[t0,x10,x20]:
[0 4 5]

Y =

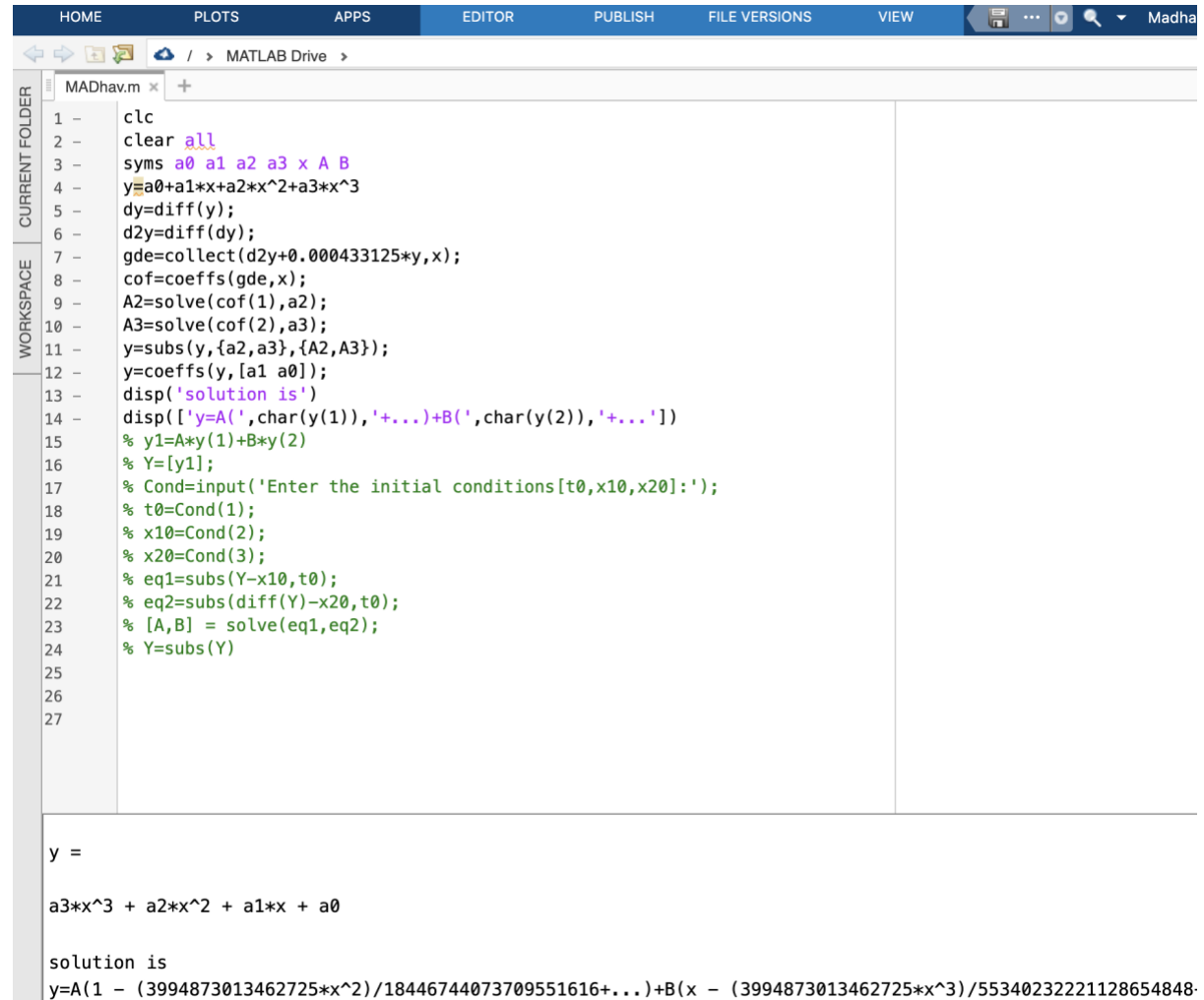
$$-(5*x^3)/3 - 4*x^2 + 5*x + 4$$

>>

NAME MADHAV ANAD

19BCE0712

LAB EXP NO 8



```
1 - clc
2 - clear all
3 - syms a0 a1 a2 a3 x A B
4 - y=a0+a1*x+a2*x^2+a3*x^3
5 - dy=diff(y);
6 - d2y=diff(dy);
7 - gde=collect(d2y+0.000433125*y,x);
8 - cof=coeffs(gde,x);
9 - A2=solve(cof(1),a2);
10 - A3=solve(cof(2),a3);
11 - y=subs(y,{a2,a3},{A2,A3});
12 - y=coeffs(y,[a1 a0]);
13 - disp('solution is')
14 - disp(['y=A(',char(y(1)),'+...)+B(',char(y(2)),'+...'])
15 - % y1=A*y(1)+B*y(2)
16 - % Y=[y1];
17 - % Cond=input('Enter the initial conditions[t0,x10,x20:']);
18 - % t0=Cond(1);
19 - % x10=Cond(2);
20 - % x20=Cond(3);
21 - % eq1=subs(Y-x10,t0);
22 - % eq2=subs(diff(Y)-x20,t0);
23 - % [A,B] = solve(eq1,eq2);
24 - % Y=subs(Y)
25
26
27
```

y =

$$a3x^3 + a2x^2 + a1x + a0$$

solution is

$$y=A(1 - (3994873013462725*x^2)/18446744073709551616+...)+B(x - (3994873013462725*x^3)/55340232221128654848-$$