MAT1011 – Calculus for Engineers (MATLAB), Fall Semester 2020-2021

Digital Assignment SL. 5, Experiment – 3A: Plotting of 3D Curves and Taylor Series

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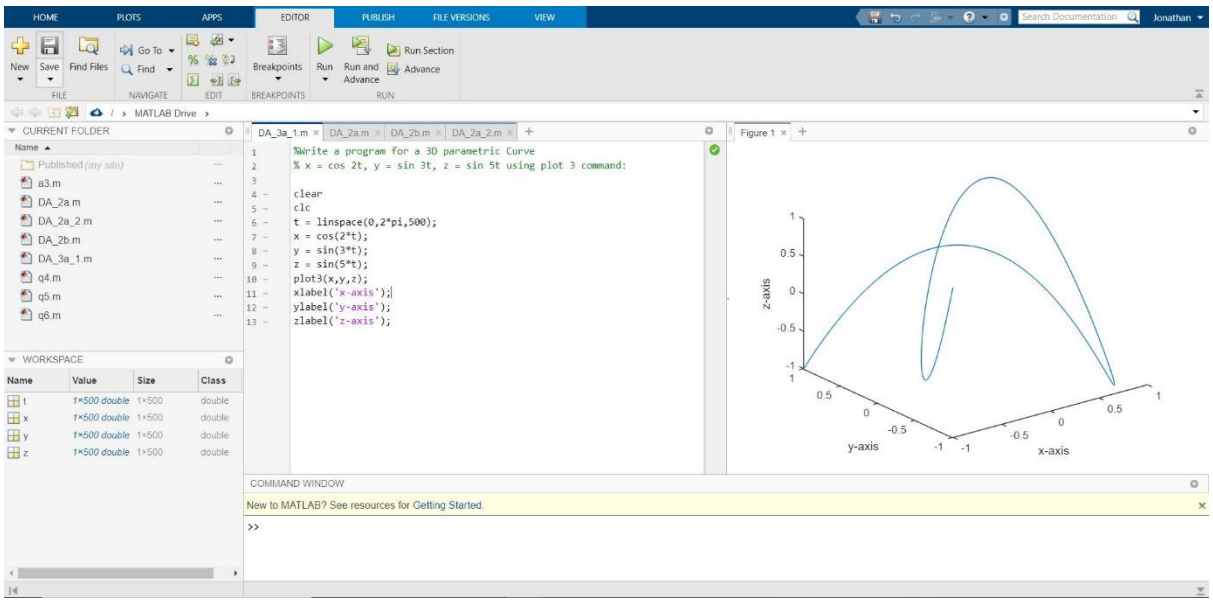
Q1) Write a program for a 3D parametric Curve x = cos 2t, y = sin 3t, z = sin 5t using plot 3 command:

A: Code is as follows:

```
%Write a program for a 3D parametric Curve
% x = cos 2t, y = sin 3t, z = sin 5t using plot 3 command:


clear
clc
t = linspace(0,2*pi,500);
x = cos(2*t);
y = sin(3*t);
z = sin(5*t);
plot3(x,y,z);
xlabel('x-axis');
ylabel('y-axis');
zlabel('z-axis');
```

Output (via Command Window): -



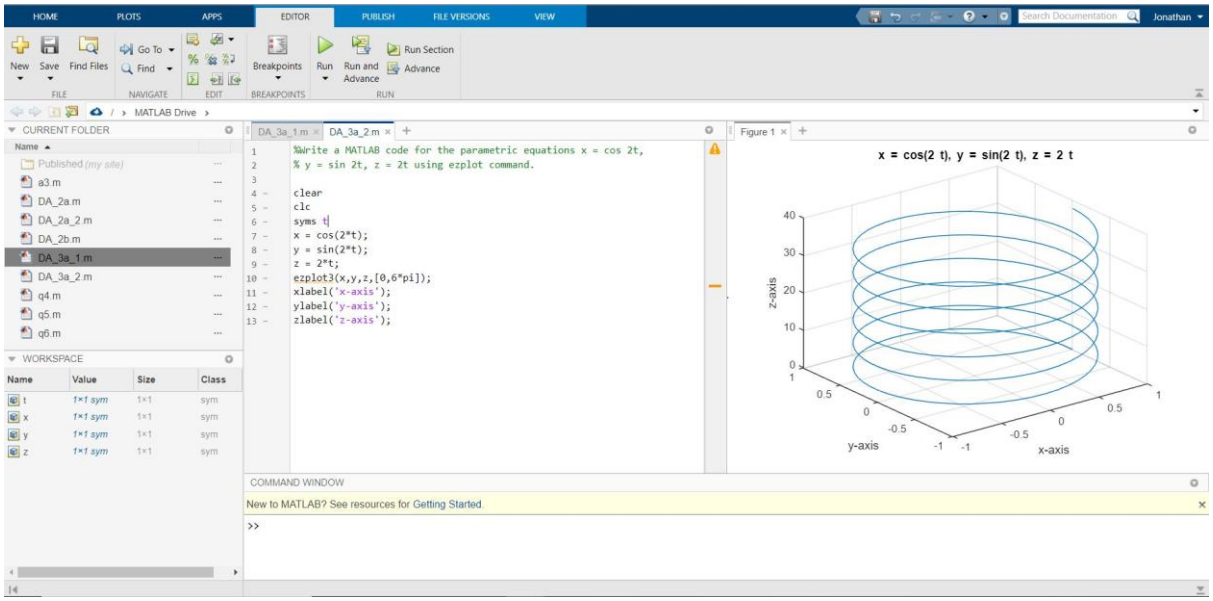
Q2) Write a MATLAB code for the parametric equations x = cos 2t, y = sin 2t, z = 2t using ezplot command.

A: Code is as follows:

```
%Write a MATLAB code for the parametric equations x = cos 2t,
% y = sin 2t, z = 2t using ezplot command.


clear
clc
syms t
x = cos(2*t);
y = sin(2*t);
z = 2*t;
ezplot3(x,y,z,[0,6*pi]);
xlabel('x-axis');
ylabel('y-axis');
zlabel('z-axis');
```

Output (via Command Window): -



Q3) Write a MATLAB code for the function f(x,y) = 2(x^2 + y^2) using ezsurf command.

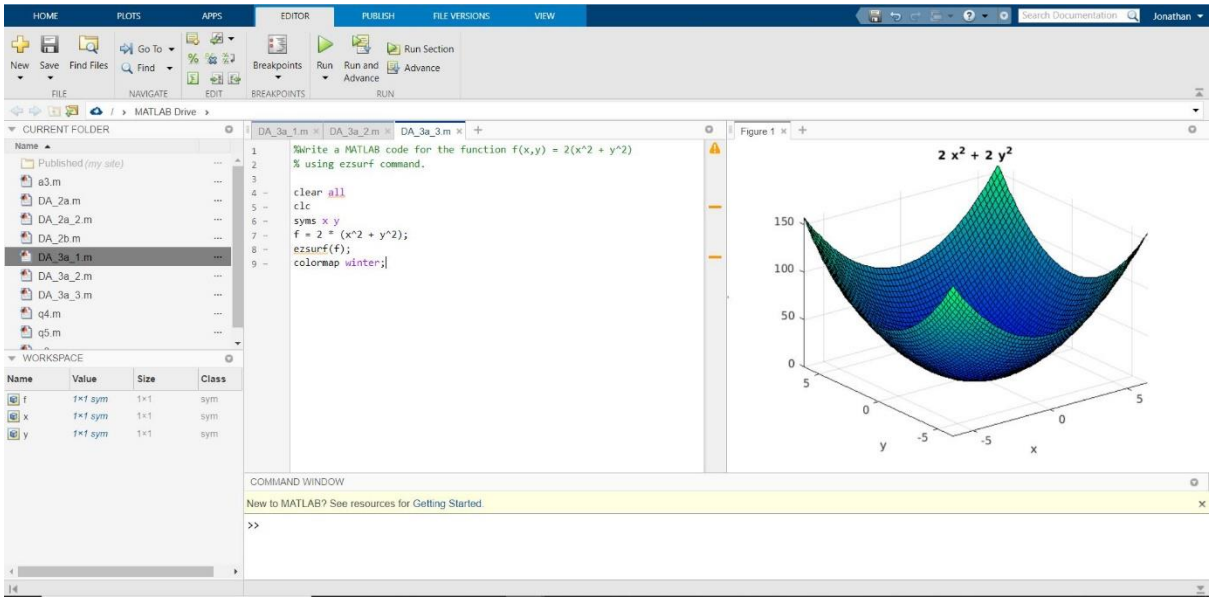
A: Code is as follows:

```
%Write a MATLAB code for the function f(x,y) = 2(x^2 + y^2)
% using ezsurf command.


clear all
clc
syms x y
```

```
f = 2 * (x^2 + y^2);
ezsurf(f);
colormap winter;
```

Output (via Command Window): -



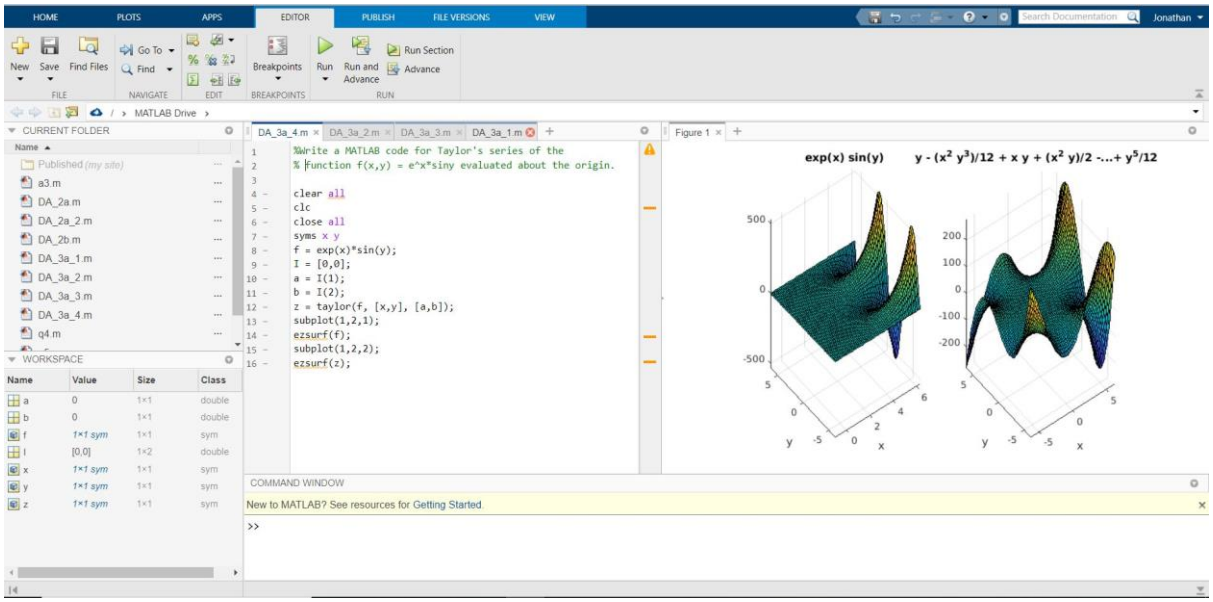
Q4) Write a MATLAB code for Taylor's series of the function f(x,y) = e^x.siny evaluated about the origin.

A: Code is as follows:

```
%Write a MATLAB code for Taylor*s series of the function f(x,y) = e^x*siny
% evaluated about the origin.


clear all
clc
close all
syms x y
f = exp(x)*sin(y);
I = [0,0];
a = I(1);
b = I(2);
z = taylor(f, [x,y], [a,b]);
subplot(1,2,1);
ezsurf(f);
subplot(1,2,2);
ezsurf(z);
```

Output (via Command Window): -


HOME
PLOTS
APPS
EDITOR
PUBLISH
FILE VERSIONS
VIEW
Jonathan
New
Save
Find Files
Go To
Find
Breakpoints
Run
Run and Advance
Run Section
Advance
MATLAB Drive
CURRENT FOLDER
Published (my site)
a3.m
DA_2a.m
DA_2a_2.m
DA_2b.m
DA_3a_1.m
DA_3a_2.m
DA_3a_3.m
DA_3a_4.m
q4.m
WORKSPACE
Name
Value
Size
Class
a 0 1×1 double
b 0 1×1 double
f 1×1 sym 1×1 sym
I [0,0] 1×2 double
x 1×1 sym 1×1 sym
y 1×1 sym 1×1 sym
z 1×1 sym 1×1 sym
DA_3a_4.m
DA_3a_2.m
DA_3a_3.m
DA_3a_1.m
%Write a MATLAB code for Taylor's series of the
% function f(x,y) = e^x*siny evaluated about the origin.
clear all
clc
close all
syms x y
f = exp(x)*sin(y);
I = [0,0];
a = I(1);
b = I(2);
z = taylor(f, [x,y], [a,b]);
subplot(1,2,1);
ezsurf(f);
subplot(1,2,2);
ezsurf(z);
Figure 1
exp(x) sin(y)
y - (x^2 y^3)/12 + x y + (x^2 y)/2 -...+ y^5/12
COMMAND WINDOW
New to MATLAB? See resources for Getting Started.
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