ID # 7510

Semester # 10

Date # 29 June

Subject # Introduction to Computer Programing

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Question #(1

Q1 (a) What are the Basic Plots and Graphics of MATLAB?

Ans) Following table describes basic plots and graphs.

→ box – Axis border.

→ Errorbar – Plots error bar along Curve.

→ hold – Retains Current graph while adding new graphs.

→ Line – Creates line object.

→ Line Spec (Line Specification) Syntax of line Specification.

→ String

→ loglog – log to log Scale point.

→ Plot – 2-D line plot.

→ Plot – 3D line plot.

→ Plotty – 2D line plots with y-axis on both left and right side.

→ Polar – Polar Coordinate Plot.
→ Semilogx — Semi logarithmic plot.
→ Semilogy — Semi logarithmic plot.
→ Subplot — Creates axis in tiled positions.
→ xLim — Sets or queries x-axis limits.
→ ylim — Sets or queries y-axis limits.
→ zlim — Sets or queries z-axis limits.

Question #1 Part (B

① Plot the function

$y(x) = \sin(x)$ $\quad 0 \le x < 6$

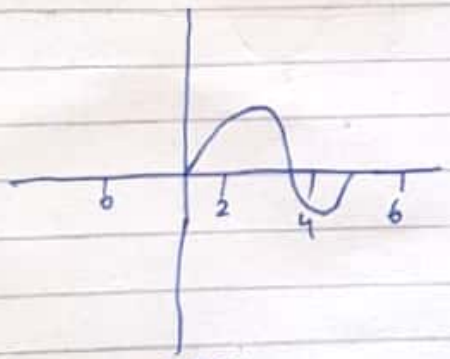
$y(x) = 2\sin(x)e^{-0.2x}$ $\quad$ for $0 \le x \le 15$

Ans)

$y = \sin x \quad 0 \le x \le 6$

$y = \sin(0)$

$= 0$



② $y = 2\sin x\, e^{-0.2x}$

$= \frac{2\sin x}{e^{0.2x}} \Rightarrow 2\sin(1) = \frac{0.84}{1.22}$

$= 0.688$

$x = 0$

$y = 0$

$y = 2$

$\frac{1.81}{1.41} = 1.21$

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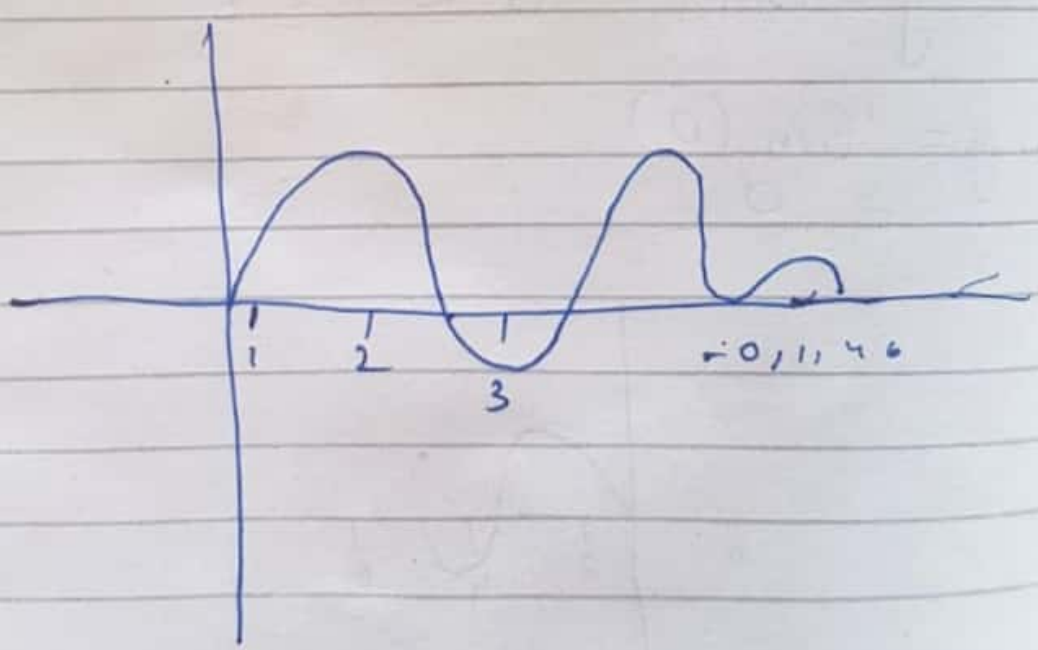
$x = 3$

$= \frac{0.28}{1.322} = 0.15$

$x = 3$

$\frac{1.97}{1.95} = 0.001$

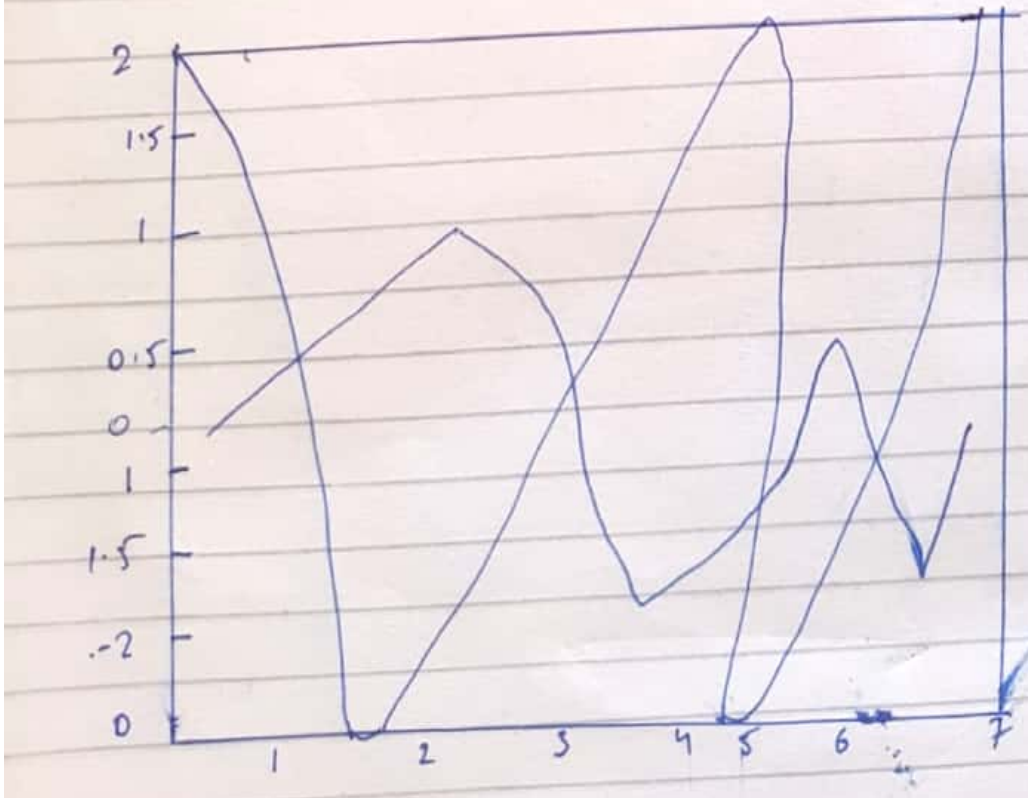


Question No # 2

Plot the function $f(x) = \sin 2x$ and its derivative $d/dx \sin 2x$ ... ?

Ans

```
x = 0 : Pi / 100 : 2 * Pi ;
Y1 = Sin (2 * x) ;
Y2 = 2 * Cos (2 * x) ;
Plot (x, y, L) ;
hold on
Plot (x, Y2) ;
```



Question # 3

Part # A

What are the Memory Managment Functions in MATLAB?

Ans) Below is the list of memory managment functions.

1. Clear - Removes Variables from memory.
2. Pack - Saves the existing variables to disk, and then reloads them contiguously.
3. Save - Selectively persists Variables to disk.
4. Load - Reloads a data file saved with the save function.
5. Quit - Exits MATLAB and returns all allocated memory to the System.

Question#3 Part (B)

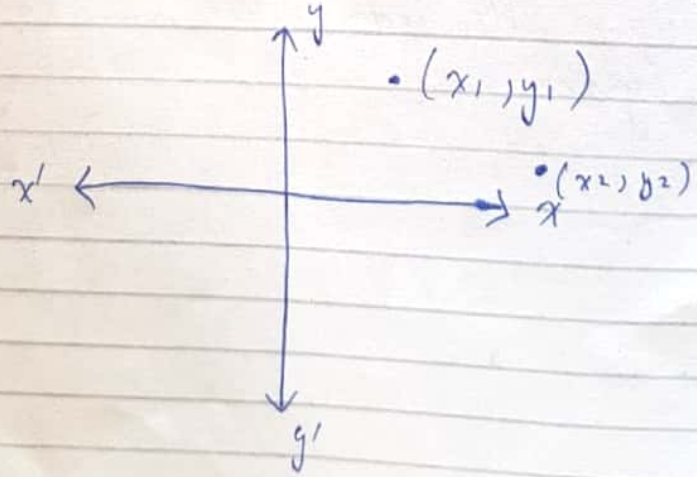
Write a MATLAB function to calculate the distance b/w two points (x_1, y_1) and (x_2, y_2) in Cartesian Coordinate System?

Ans)

The distance b/w two points (x_1, y_1) and (x_2, y_2) on Cartesian Coordinate System / plane is equation by the equation.

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

Write a program to calculate the distance between any two points (x_1, y_1) and (x_2, y_2) specified by the user use good programing in your program. Use the program to calculate the distance b/w the points $(-3, 2)$ and $(3, -6)$



Distance b/w two points on a Cartesian plan.

Formula for the distance b/w two points

$$d = \text{sqrt}((x1 - x2)\hat{}2 + (y_1) - y2))\hat{}2);$$

Question # 4

Part (a):- What do you mean by M-File in MATLAB?

Ans) M-Files :-

MATLAB allows writing two kinds of program files.

Scripts :- Script files are program files with .m extension. In these files, you write series of commands, which you want to execute together. Scripts do not accept inputs and do not return any outputs. They operate on data in the workspace.

Functions:-

Functions files are also program files with .m extension. Functions can accept inputs and return outputs. Internal variables are local to function.

You can use the MATLAB editor or any other text editor to create your .m files. In this section, we will discuss the script files. A script files contains multiple sequential lines of MATLAB commands and function calls.

You can run a script by typing its name at the command line.

Question # 4 Part #(B

Ans)

```
Clc
Clear all
Close all
t= input ('enter temperature in
Fahrenheit:')
K = ((F-32)* 5/9) + 273.15;
K
f= 1:100
```

Question #5

Write a MATLAB program to evaluate the equation $y(x) = x^2 - 3x + 2$ for all values of x between -1 and 3 steps of 0.1 using for loop.

Plot the resulting fuction using a 3-point thick dashed red line!

Ans)

```
clc
n = 1

for ii = -1 : 0.1 : 3

x(n) = ii

y(n) = ii^2 - 3*ii + 2;

  n = n + 1;
end

Plot (x, y, 'r--', 'Line Width', 3);
```

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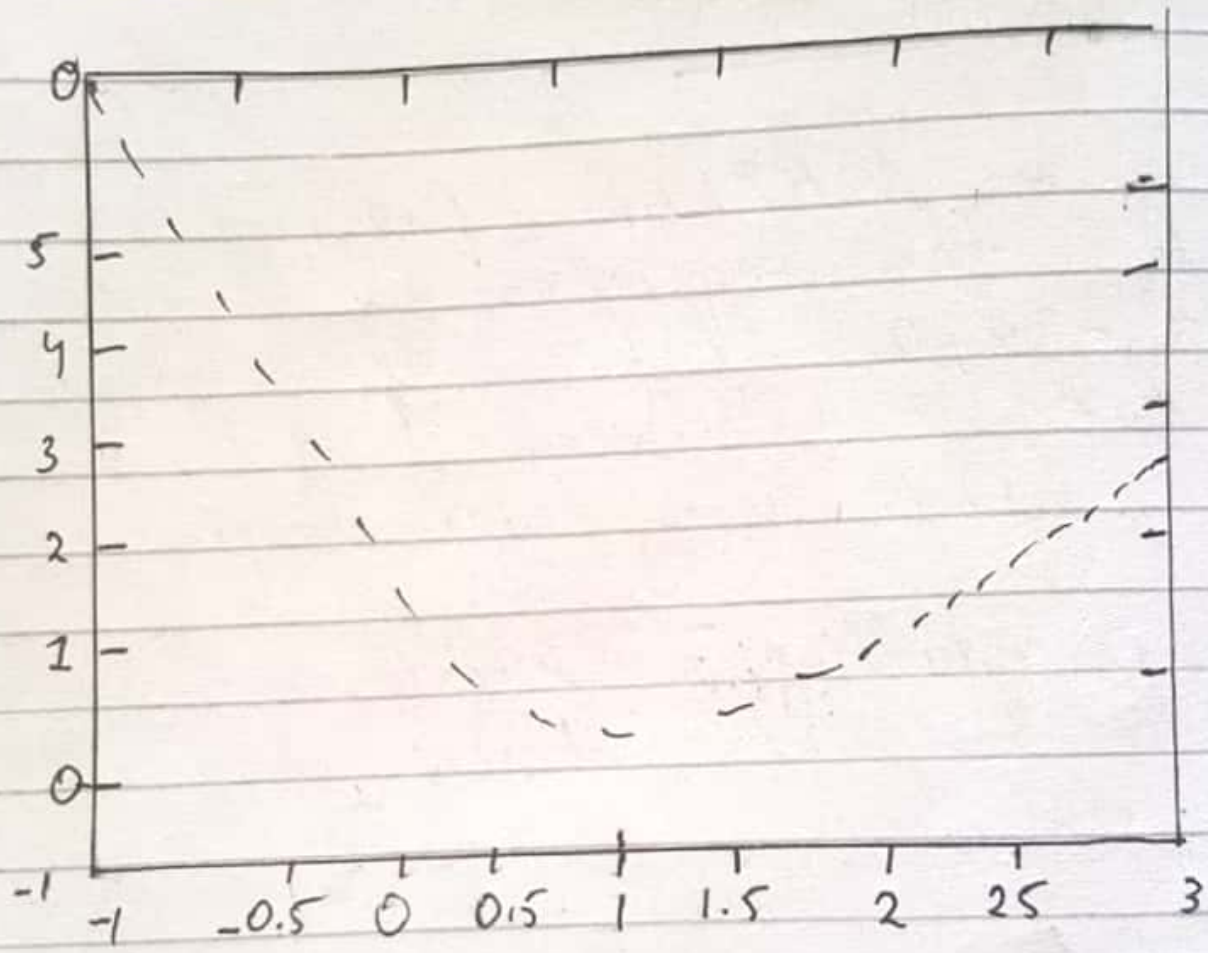

End