Introduction to Mathematical Software & Programming (CELEN087)

LAB3 Instructions

a) Create a MATLAB script file called **threeCurves.m** to generate a figure.

    (i) Make a vector for x-values such that $-2 \le x \le 2$. Use **linspace()** command.

    (ii) Define the following functions:

$$y = exp(x^3 - 1), \quad z = 2x\, exp(x^3 - 1), w = x\, sin(x) + 1$$

    (iii) Plot the graphs of y, z, w in one frame. Set **grid on**

    (iv) Rescale the y-coordinate (using `ylim()` command) such that you can clearly see the intersection points of the three curves you have plotted.

    (v) Change the curve styles/colours: y should be dotted blue; z should be dashed green and w should be solid black.

    (vi) Change the line width for all the curves to 2.

    (vii) Click on the points of intersection to find the coordinates.

    (viii) Give appropriate x and y-coordinate labels. Put your student ID as the plot title.

    (ix) Now save this figure as **threecurves.png**

b)

    (i) Open LaTeX and create a beamer document in order to create a presentation:

    (ii) Use: `\documentclass[11pt]{beamer}` and

    (iii) `\usepackage[english]{babel}`

    (iv) `\usetheme{madrid}`

    (v) `\usecolortheme{default}`

    (vi) Create 5 slides with the specifications given below:

        SLIDE 1: create a title slide with title: *THREE CURVES*. Put your student ID as the subtitle and use date and institution.

        SLIDE 2: Create a slide with title: TABLE OF CONTENTS. You should create sections for your presentation from here onwards.

        SLIDE 3: Create a slide with title: THREE FUNCTIONS. This slide should have two columns. On the left column you should type the expressions of y, z and w in the form of an `eqnarray`. On the right column include the figure you saved in previous section. Scale the figure to 45% and add a caption: *THREE CURVES*. *Use a transition scheme such that the left column appears first and then the right column.*

SLIDE 4: create a slide with title: OBSERVATIONS. Make the following table and fill in the information from your plot in the previous section.

Function	Intersection with f	Intersection with g	Intersection with h
$f(x)$	$-$	(,)	(,)
$g(x)$	(,)	$-$	(,)
$h(x)$	(,)	(,)	$-$

Table 1: Table of observations

SLIDE 5: create a slide with title: SUMMARY. Use hyperlink buttons to create links to all the previous slides