Homework #2

Scientific Computing (501125-2)

2022-2023 3rd Trimester

Due: Wednesday May 3, 2022, 11:59 pm via Blackboard

1) What is the benefit of the command close all?

2) Can we plot vector X = [3 9 27] over time t = [1 2 3 4]? Why or why not?

3) Write the Matlab commands that plot the vector X = [11 43 127] over time t = [1 2 3]. Make sure that the vector t is on the x axis and the vector X is on the y axis.
   - Add a title to the figure that says "This is a plot of distance over time"
   - Add a title to the x axis that says "This is time(s)"
   - Add a title to the y axis that says "This is distance(m)"

4) When do we use a legend in Matlab?

5) Given the dependent vectors X, Y, and Z over the independent vector, if you know that X = [3 9 27], Y = [10 8 6], Z = [4 4 4], and t=[1 2 3], use legend to plot these multiple dependent vectors on the same plot.
   - Use green for X
   - Use blue for Y
   - Use red for Z
   - Add a title to the figure that says "This is a plot of distance over time"
   - Add a title to the x axis that says "This is time(s)"
   - Add a title to the y axis that says "This is distance(m)"
   - Print the legend box
   - Move the legend box to the south east

6) What command can we use to display multiple plots on the same figure?

7) Given that x = 0:0.1:2*pi do the following using the subplot function
   - Define a 2 by 3 subplot figure
   - In the first box, plot sine x
   - In the second box, plot cosine x
   - In the third box, plot negative exponential function of x
   - In the fourth box, plot x^3
   - In the fifth box, plot 2*x
   - In the sixth box, plot x*x

8) Create a vector named time of numbers over the range from 0 to 5 with increment 0.5 every time (Hint, use the colon operator), and then do the following:

- Create another vector named height and set it up equal to 2.13 * time .^ 2 - 0.13 * time .^ 4 + 0.000034 * time .^ 4.752
- Write a Matlab commands that plot the vector height over time. (Hint, make sure that the vector time is on the x axis and the vector height is on the y axis).
- Rewrite the previous command such that the printed line is changed to be a dashed line.
- Rewrite the previous command such that the printed line is changed to be a solid line and stars to mark data points.
- Rewrite the previous command such that the printed line is changed to be a **red dashdot** line and **circles** to mark data points.
- Add a title to the figure
- Add a title to the x axis
- Add a title to the y axis