Homework #2

Scientific Computing (501125-2)

Spring 2022

Due: Saturday March 19, 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

1. What command can we use to display multiple plots on the same figure?
2. 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
3. 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