

College of Engineering

GE 209 Introduction to Computer Programming

Laboratory 7

MATLAB BUILT-IN FUNCTIONS, PLOTTING

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LABORATORY OBJECTIVES

This lab work is intended to apply what has been covered in the lectures concerning built-in functions and more on plotting examples.

PART 1: GUIDED TASKS

1. Example 1 : More plotting functionalities

a. Create two vectors for the velocity and distance for a car with acceleration $a = 1.55 \text{m/s}^2$ every second for the first 10 seconds (t=0..10).

Give the results in a matrix containing three columns in which the first column is time (s), the second column is distance (m), and the third column in velocity (m/s).

Recall, the formulas for velocity (v) and distance (d) as a function of time of a car that accelerates from rest at constant acceleration a are:

$$V = a \cdot t$$
 and $d = \frac{1}{2}a \cdot t^2$

(hints: since t is a vector then V and d are also vectors based on t element-wise)

b. Create 1 graph containing two plots: V versus t and d versus t

c. Use subplot command to redraw the two curves in two separate graphs (2 lines x 1 column format)

Answer:

a. >> a=;
>> t =;
>> V =
>> d=
b. >> plot(,,,,
>> xlabel
>> ylable
>> title
c. >> subplot(), plot()
>> xlabel
>> ylable
>> title
± ', ', ', ', ', ', ', ', ', ', ', ', ',
*
>> subplot(),

PART 2: GRADED TASKS

Exercise 2.: more on plotting features Plot the following 4 functions in the same graph (add labels to identify plots): 1. $y1=\sin(2t)$ 2. $y2=\cos(2t)$ 3. $y3=1+\cos(t)*e^{(-0.1t)}$ 4. $y4=t^2-t+1$ For t=-pi to pi with step = 0.05pi