

## CE 300 SUMMER PRACTICE

### WRITING FUNCTIONS AND SCRIPTS ASSIGNMENT

**Q1.)** For function  $ax^2+bx+c=0$  write a script that gives the roots of equation. Use necessary commands to take a,b and c as input parameters. Your final result should be in the form of;

*Function has two complex roots.*

*Function has two identical roots that is ....*

*Function has two real roots which are ... and ....*

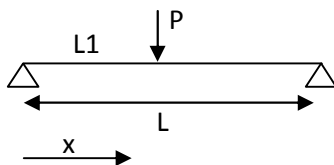
Try your script for  $x^2-2x+3=0$ ,  $x^2-6x+9=0$  and  $x^2+5x-6=0$

**Q2.)** Write a script that draws the moment and shear force developed on a simply supported beam shown below **in one figure** for two loading conditions. Do not develop functions to use.

Your script should ask for the parameters below and operate accordingly.

- i. Loading Type (Point load or distributed load)
- ii. Length of span (L)
- iii. Application point of load if loading type is point loading (L1)
- iv. Magnitude of load (P)

**Hint:** The moment and shear formulas are given below for simply supported beam:



**For  $0 < x < L1$**

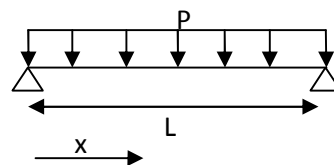
$$V(x) = P \cdot (L - L1) / L$$

$$M(x) = P \cdot (L - L1) / L \cdot x$$

**For  $L1 < x < L$**

$$V(x) = P \cdot (L - L1) / L - P$$

$$M(x) = P \cdot (L - L1) / L \cdot x - P \cdot (x - L1)$$



**For  $0 < x < L$**

$$V(x) = P \cdot L / 2 - P \cdot x$$

$$M(x) = P \cdot L / 2 \cdot x - P \cdot x \cdot x / 2$$

- Use “subplot” command in order to have shear and moment diagrams in one figure.

**Q3.)** For the simply supported beam in Q1, write a MATLAB function named ‘shearmoment.m’ in order to calculate shear force and moment at “x” meter from the left side of the beam.

In your function, the only input argument should be the distance, x.

Your output should be in the form of;

Moment is ... kN.m.

Shear force is ... kN.

**Q4)** The laboratory grades and homework grades of five students for four weeks are given below. Write a function called **average** that calculates the average laboratory or homework grades of Student(i) from week j to k considering the followings.

- First of all make a “student struct”.
- The inputs of your function are student struct, student name, gradetype, starting week and ending week.

Ex: **average (student, ‘Ahmet’, ‘labgrades’, 2, 4)**

- By typing average (student, ‘labgrades’, ‘Ahmet’, 2, 4), the output should be;

**The average labgrades of student Ahmet is between is 69.3 week 2 and 4’.**

	Labgrades				Homeworkgrades			
Student Name	Week1	Week2	Week3	Week4	Week1	Week2	Week3	Week4
Ahmet	40	48	72	88	100	80	65	100
Mehmet	60	40	56	80	50	80	75	80
Ali	56	100	48	72	75	77	18	80
Ayşe	52	44	28	40	82	60	52	70
Fatma	72	12	84	40	99	52	92	60