

## Sample Competency Test#1

The test is open textbook and two 8.5x11 handwritten pages only. You are asked to write a program in MATLAB.

**Specifications: In a single worksheet, write the following program**

1. Input text as a comment to put your full name and section number - 001.
2. Use disp command to put your full name and section number – 001 so that it shows up in the command window.
3. Name your file *lastname\_firstname\_t1\_mon\_f07.m* and save it in T: directory.

**Put Part# (e.g Part#4) as MATLAB comment as well as use disp command for the Part# to show up in the command window for parts 4-10 below. All outputs should be evaluated as numbers in decimal format.**

4. Multiply matrix  $\begin{bmatrix} 2 & 3 & 4 \\ 5.2 & 6 & 7 \\ 8 & 9 & 1 \end{bmatrix}$  by  $\begin{bmatrix} 4 & 6 \\ 78 & 5 \\ 1 & 1 \end{bmatrix}$

5. Plot  $y=5e^{3x}$  on a log-log plot.
6. Assign velocity of a body  $t^2 + \ln(2t)$  to a variable.. Use the subs command to find the velocity at  $t=5$ .
7. Assign velocity of a body to  $5e^{-t} + \sin(2t)$ . Use the diff and subs command to find the velocity at  $t=5$ .
8. Find the distance covered by the body between  $t=2$  and  $t=5$  if the velocity of the body is given by  $v(t)=5 \ln(t) \sin^2(2t)$ .
9. Find a time ( $t>0$ ) when the velocity of a body is  $10 \text{ m/s}$  if velocity of the body is given by  $v(t)=5t^3+4t^2+6$ .
10. Plot velocity as a function of time:  $v(t)=5t^3+4t^2+6$  from  $t=0$  to  $t=10$ . The plot needs to have a title and labeling of the axes.