Due: Thursday January 13th
Problems to be turned in 1,5,6

1. Compare and contrast the following Matlab commands:
   (a) $[1:4; 5:8]$ and $[1:4, 5:8]$
   (b) $[10, 12; 13, 14].*$ `eye`(2) and $[10, 12; 13, 14]*$ `eye`(2)
   (c) $[1, 2; 3, 4].\wedge 3$ and $[1, 2; 3, 4] \wedge 3$
   (d) `disp(ones`(3)) and `disp ones`(3)
   (e) let x = -3:3 x(0), x(1), x[0], and x[1].
   (f) x(2,:) and x(:,2) if x= `reshape`(1:9,3,3)
   (g) The operators = and == and ~=

2. Use `linspace` function to create vectors identical to those obtained with the statements that follow. Use multiple statements where necessary. (Use MATLAB's built-in `norm` function to test whether two vectors are equal *without* printing the elements.)
   (a) x = 0:10
   (b) x = 0:0.2:10
   (c) x = -12:12
   (d) x = 10:-1:1

3. A matrix can be treated as a collection of row or column vectors. Given the row vectors $u = (1, 2, 3)$ and $v = (4, 5, 6)$, write the (single) statement to create the 2×3 matrix A having u as its first row vector and v as its second row vector.

4. Given the matrix $C = \begin{bmatrix} 11 & 5 \\ 2 & 1 \\ 18 & 7 \end{bmatrix}$, write the two statements to create $s = (11, 2, 18)^T$ and $t = (5, 1, 7)^T$, by extracting the columns of C.

5. Let $D = \begin{bmatrix} 2 & -1 & 0 & 0 \\ -1 & 2 & -1 & 0 \\ 0 & -1 & 2 & -1 \\ 0 & 0 & -1 & 2 \end{bmatrix}$, $M = \begin{bmatrix} 2 & 8 & 14 & 20 \\ 4 & 10 & 16 & 22 \\ 6 & 12 & 18 & -24 \end{bmatrix}$, and $C = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 \\ -1 & 1 & 0 & 0 & 1 \\ -1 & -1 & 1 & 0 & 1 \\ -1 & -1 & -1 & 1 & 1 \\ -1 & -1 & -1 & -1 & 1 \end{bmatrix}$,
   (a) Use the `diag` function to create D.
   (b) Write a one-line expression to create C.
   (c) Use the `reshape` function and `colon` notation to create M. Your assignment first create a vector with `colon` notation and then `reshape` the vector to produce the desired matrix.

6. Plot $\sin\theta$ for 50 points in the interval $0 \le \theta \le 2\pi$. Connect the points with a dashed line and label the points with open circles.