**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 $\sim=$
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 $2 \times 3$ 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 $0 \leq \theta \leq 2\pi$. Connect the points with a dashed line and label the points with open circles.