# HW06: Linear Algebra

Date Due: 11:59pm, Wed, 18 March 2015.

1. **(5 points) Do Problem 12.2 (myIsOrthogonal) in Siauw and Bayen**

2. **(5 points) Do Problem 12.8 (myNumSols) in Siauw and Bayen**

3. **(15 points)** Write a function with the header `[A, b, m] = myForwardSweep(A,b)` which performs systematic linear transformation on the augmented matrix `[A|b]`. Note that this function should return not only the transformed A and b, but also a matrix containing the m(i, j) used in the transformation. Recall that
   ```
   m(i, j) = -A(i, j) / A(j, j)
   ```
   Since m will only populate with elements below the diagonal, you should first initialize m with *nxn* zeros.

4. **(15 points)** An upper triangular matrix is a square matrix with all zeros BELOW the diagonal elements. Write a function with header `[x] = myBackSub(A, b)` which solves Ax = b for x given an *nxn* upper triangular matrix A and an *nx1* vector b. Use nested for loops, do not use built in Matlab functions `inv`, `pinv`, `\`.

**Deliverables:** Submit the following m-files (separately, not zipped) onto Blackboard. Be sure that the functions are named ***exactly*** as specified, including case. You will receive no credit for incorrectly named functions.

```
myIsOrthogonal.m
myNumSols.m
myForwardSweep.m
myBackSub.m
```