Matlab Goals for Friday

1. Be able to load data sets into Matlab (they are on the class website).
2. Be able to find the line of best fit using the two methods from class. Using that slope and intercept, plot the line of best fit together with the data. Do Exercise 2 on pg. 3 of the notes (only with our 2 lines).
3. Use Matlab's help feature to differentiate the following ways of solving $A\mathbf{x} = \mathbf{b}$:
   (a) $\mathbf{x} = A^{-1}\mathbf{b}$ (the inverse of A).
   (b) Use the "pseuodoinverse" of A: `x=pinv(A)*b`
   (c) Use the "slash" command: `x=A\b`
4. Run the example on pg. 8-10 of the handout using the Matlab scripts on the class website. We'll talk more about these on Tuesday.

Homework 5, Math 472

You should try to do all of these, but only turn in the starred problems.

1. In the script file `banditW.m`, how are we modeling the payout for the machines? That is, how are we doing the actual payouts after playing?
2. Run `banditW.m` and `banditS.m` each several times and comment on what you see being reported. Is one of the algorithms performing better than the other? (You might change the script file for `softmax` so that the two algorithms run the same number of times).
3. (*) Let the matrix A be given below. Find a basis for the row, column and null spaces of A. You might find the `rref` command useful in Matlab, but do provide your answer by hand.
$$A = \begin{bmatrix} 1 & -3 & 4 & -1 & 9 \\ -2 & 6 & -6 & -1 & -10 \\ -3 & 9 & -6 & -6 & -3 \\ 3 & -9 & 4 & 9 & 0 \end{bmatrix}$$
4. (Referring to the line of best fit) Show that what we get by solving the normal equations is the same as what we get by minimizing the error using Calculus (That is, answer questions (c) and (d) on page 2 of the handout. The error is at the bottom of page 1).
5. (*) Exercise (j) at the top of pg. 3 will finish the work we started on Thursday- Give the solution.
6. (*) Find the line of best fit for the data on page 4 of the handout, and include a plot showing the data points and the line itself (publish the script file, then print it).
7. (*) Exercise 2 on page 6 (The eigenvalue-eigenvector problem).