18.06 Problem Set 8

Due Thursday, 11 November 2010 at 4pm in the undergrad math office. Please note that the problems from the textbook are out of the 4th edition: make sure to check that you are doing the correct problems. For MATLAB problems, please include a printout of your code with your problem set. You can type `diary(''filename'')` at the beginning of your session to save a transcript, and `diary` off when you are done.
Each Problem worth 10 points.

1. Do problem 18 from section 6.1.
2. Do problem 30 from section 6.1.
3. Do problem 7 from section 6.2.
4. Do problem 11 from section 6.2.
5. Do problem 7 from section 6.3.
6. Do problem 3 from section 6.6.
7. Do problem 18 from section 6.6.
8. Do problem 4 from section 8.3.
9. Do problem 11 from section 8.3.
10. MATLAB or favorite language:

    For $n = 7$, generate many random matrices from a normal distribution. Obtain a sample percentage of matrices with k real eigenvalues for $k = 1, 3, 5, 7$. Why are these the only allowed k's?

    In matlab, randn(7) generates the matrices. sum(e==real(e)) counts the number of real entries in e.

    a loop of 10000 trials (or much larger!) can be done with

    for i=1:10000, ... STUFF end