Homework 4

Reading assignment: Sections 5.4, 11.3, 11.4, 11.5 in the textbook and Chapter 1 (LU factorization) in the *Additional Lecture Notes* on the course website (under Textbook and course reader). You can skip section 1.5.

Homework problems

1. Exercise A5.6 (b).
2. Exercise A6.3.
3. Exercise A6.9.

   Julia users will need to add the `FFTW` package to compute discrete Fourier transforms. The function `fft(x)` returns the DFT Wx of a vector x; `ifft(x)` returns the inverse DFT $W^{-1}x$. The Julia equivalent of the MATLAB code in part (d) of the problem is

   ```
   a = randn(n,1);
   b = randn(n,1);
   A = hcat( [ circshift(a,k) for k=0:n-1 ]... );
   ```

4. Exercise A6.13.
5. Exercise A6.16.
6. Exercise A7.5.
7. Exercise A7.30.