HW5 (due on May/8 12:30PM)

Question1: Load ding-data1.txt. (year, month, X) (45 points)

1. plot X (vs time) (5 points)
2. Use **periodogram** to calculate and plot the power spectrum of X (remove the mean of X first) as the function of the frequency and period respectively. (15 points) (Actually, you can try to calculate **periodogram** first without removing the mean of X. You will see why we need to remove the mean first)
3. Use **cwt** to calculate and plot the wavelet power spectrum of X (remove the mean of X) (. (25 points)

Question2: Load ding-data2.txt. (year, month, X, Y) (55 points)

1. plot X and Y together (vs time). (5 points)
2. Use **FFT** and **periodogram** calculate (and plot) the power spectrum of X (remove the mean first), respectively. (20 points)
3. Calculate and plot the cross-spectrum between X and Y (remove the means of X and Y). (10 points)
4. Use a low-pass filter to remove any high frequency variability (higher than the 2-year periods) from X and Y and plot the residual time series of X and Y together. (20 points)