

## Math 530, Spring 2009

### Homework 1 Due February 4

Download the global temperature anomaly data set at  
.....<http://cdiac.ornl.gov/ftp/trends/temp/jonescru/global.dat>

We will only analyze the annual, not monthly anomalies.

- 1) Fit a polynomial trend function (you choose the degree of polynomial)
- 2) Find  $s$ , the standard deviation of residuals. Plot the residuals from your fit. Is there still structure left in the data?
- 3) Fit the "remaining structure". Compute and plot the autocorrelation of the residuals.
- 4) Model the global temperature data using the autoregression equation.
- 5) Using the autoregression equation, predict the global temperature anomalies in the years 2008 and 2009.  
Also, give the approximate 95% error bounds for them.