Test #3 will be on Wednesday, April 22.

Exercise: Find the Fisher information matrix for a k-parameter exponential family with the natural parameter w(theta)=theta.

Read Sections 8.1, 8.2.1, 8.3.1 (skip example 8.3.8), 8.3.2, and 10.3.1 (stop at the beginning of example 10.3.4).

Do problems 8.3, 8.5, 8.6, 8.15, 8.20.

Comment on Problem 8.5(c):

There are a few ways you can do this. Here is one. If we set theta=1, the Pareto family becomes a scale family in the parameter nu. Since T is scale invariant, the distribution of T (when theta=1) does not depend on the value of nu. Thus we can also set nu=1 without loss of generality. Now check that if X is Pareto with theta=1 and nu=1, then Y=log(X) has an exponential distribution with mean 1. This allows you to find the distribution of log(T) using the memoryless property of the exponential distribution: T = sum[log(Xi) - log(min Xi)] and each of the nonzero terms in this sum has an exponential distribution with mean one. (This is just an informal argument.) Thus log(T) has a gamma(n-1,1) distribution.