ST 793 Homework 2

1. Book Problems: 2.34 2.49 2.51 2.54

2. Let Y_1, \ldots, Y_n be IID $f(y; \mu, \sigma) = \sigma^{-1} f_0\{(y - \mu)/\sigma\}$, where f_0 is a base (standard) density on $(-\infty, \infty)$ and μ is a location parameter and $\sigma > 0$ is a scale parameter. We say that $f(y; \mu, \sigma)$ is in the *location-scale* family. It is assumed that the base distribution has finite mean and variance. For example Normal, Laplace, generalized extreme value distributions are examples of scale-location family models.

Calculate the Fisher information for the parameters (μ, σ) . What can you comment about the asymptotic variance inflation for estimating μ by treating σ unknown.