

18.466 PS7 hints

In Problem 4, the problem is to show that the given h function is not adjustable, for an arbitrary probability law P such that $E|x| = +\infty$. (As stated in the problem, the law P has a density f , but that is not essential.)

By the way: the problem is not at all to show this if P is itself a double-exponential distribution. In fact, by part of Theorem 3.3.16, in the log likelihood case, if the distribution P of the data does belong to the parametric family, then the h function always IS adjustable. Also, for a double exponential distribution P , $E|x|$ is finite.

Using Lemma 3.3.8, if you take $h(\theta, x) - h(\phi, x)$ where θ and ϕ have different values of the parameter σ , then the difference will have absolute value of order $|x|$ as $|x|$ becomes large.

In problem 5, $h(\theta, x) = -\log f(\theta, x)$ where $\theta = (\mu, \sigma)$ and $f(\theta, x) = f((x - \mu)/\sigma)/\sigma$.