EEL 6825 HW #3 Solution Spring 2005 J.B. Gao

This is a simple HW. Most did very well. Here are a few comments:

1. The key here is to realize that $\theta = 1/\bar{x}$. Then (c) is easy to solve.

It would be better to make those simple plots using matlab, if you're not very familiar with matlab yet.

11. Surprisingly, the statement of the problem is incorrect in some books. Here is the version in my book:

$$D_{KL}(P_1(x), P_2(x)) = \int P_1(x) \ln \frac{P_1(x)}{P_2(x)} dx$$

For this problem, I only want you to realize that the problem is equivalent to $\max P_2(x)$. Then you can simply refer to sec.3.2.3 of the book to get the answer.

Some people tried to actually derive the relations. It's doable, but is messier than that showed by most of you, since μ is also in the expression of $\sum$.

15. There is no problem with the derivation, but interpretation is not satisfactory. This is a sword with two edges:

(i) The scheme provides an initial estimation of the distribution for the parameter;

(ii) When n becomes very large, then the initial estimation becomes less and less relevant.

38. (a) is a special case of (b). (b) was derived in my lecture. (c) is more related to (a), since prior probability is not considered (or equivalently, both cases are considered equally probable).