**數理統計(二) 作業1** **Due: Sep. 30, 2014**

1. (a) Show that the  belongs to a 2-parameter exponential family.

(b) Find the joint sufficient statistic for  and  using the result in (a).

1. Let  be a RS from a distribution with pdf

 

1. Show that  belongs to a 1-parameter exponential family(一個參數指數族).
2. Find a sufficient statistic(充分統計量) for  using the result in (a).
3. Let  be a RS from a distribution with pdf

 

* 1. Show that  belongs to a 1-parameter exponential family.
  2. Find a sufficient statistic for  using the result in (a).

1. Let  be a RS from  with pmf

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1. Show that is a sufficient statistic for  by definition.
2. Show that is a sufficient statistic for  by Fisher-Neyman factorization theorem.
3. Show that is a sufficient statistic for  by exponential family.
4. Find the MLE of  and show that the MLE is a function of the S.S.
5. Let  be a RS from ,  with pdf

,  

(a) Show that is a sufficient statistic for  by definition.

1. Show that is a sufficient statistic for  by Fisher-Neyman factorization theorem.
2. Show that is a sufficient statistic for  by exponential family.
3. Find the MLE of  and show that the MLE is a function of the S.S.
4. Let  be a RS from  with pmf

  

(a) Show that is a sufficient statistic for  by definition.

(b) Show that is a sufficient statistic for  by Fisher-Neyman factorization theorem.

(c) Show that is a sufficient statistic for  by exponential family.

1. Find the MLE of  and show that the MLE is a function of the S.S.