

**Homework Set 3 St 432**  
**January 29, 2008.**

Q1. In an agricultural survey of the US the population size is  $N= 3078$  counties and a simple random sample without replacement of  $n=300$  is taken. Of these 39 are in the western states of the US.

The subpopn sample mean and standard deviation for the number of acres under farming in the western states US are  $598,680.6 (\bar{y}_k)$  and  $516,157.7 (s_k)$  respectively based on the subsample of  $n_k=39$ .

- a) What is the standard error of the subpopulation mean first when we know the subpopulation size is  $N_k =391$  and also when we don't know the subpopulation size?
- b) What is the estimate of the subpopulation total first when we know the subpopulation size is  $N_k =391$  and also when we don't know it?
- c) What is the estimate of the subpopulation total standard error when we know the subpopulation size is  $N_k =391$ ? I will not expect you to calculate the other standard error when we don't know the subpopulation size.