Q3-Part 2. (9 marks):

Second, we decide to select n=30 households proportionately to their size M_i. We consider that this sampling, performed in reality without replacement, can be likened to be a sampling design with replacement.

(a) (1 mark) Give, as a function of M_i, the selection probability π_i of household i at the time of each primary drawing.

(b) (4 marks) Give an unbiased estimate $\widehat{\tau}_{\text{pps}}$, and give a 95% confidence interval estimated for τ.

(c) (4 marks) What do you conclude in comparison to the results of Part 1.(c) and Part 1.(d)?