1. Do exercise 10.7

2. Consider a market with 100 identical consumers. Each consumer’s individual demand curve for the product is given by:

\[ q = \begin{cases} 
10 - p, & 0 \leq p \leq 10 \\
0, & p > 10.
\end{cases} \]

Suppose that the market is served by a monopolist that produces the good at constant unit cost = 2. Suppose that there is no possibility of arbitrage between the consumers (no re-selling).

(i) Draw the demand curve of a typical consumer and the marginal cost curve of the monopolist.

(ii) What is the optimal two part tariff (fixed fee and unit price) that the monopolist can charge?

(iii) What is the total quantity bought under the optimal two part tariff? How does it compare to the socially optimal output?

(iv) What would be the problem if consumers can re-trade the goods between themselves at no additional cost?

3. Consider the market described in problem 2. Now, suppose that in addition to the 100 consumers described in problem 2, there is another group of 100 additional consumers enter the market. The consumers in the second group are identical but differ from the first group of consumers. In particular, the individual demand curve of each consumer in the second group is given by:

\[ q = \begin{cases} 
10 - 2p, & 0 \leq p \leq 5 \\
0, & p > 5.
\end{cases} \]

(i) Draw the demand curve of a typical consumer in the new group and compare it to the demand curve of a typical consumer in the first group.

(ii) Assume as before that consumers do not re-trade the good after buying. Suppose the monopolist knows which consumer belongs to the first group and which ones belongs to the second group. What is the optimal two part tariff for each group?

(iii) Now, suppose the monopolist cannot identify whether a specific consumer belongs to the first or the second group. What are the problems in using the scheme in your answer to part (ii) of this question? Diagrammatically, explain why the monopolist may not be able to extract all consumer surplus from one of the groups.

4. Do exercise 11.1