

Question 1: Consumer surplus

Mia is willing to visit her friends by bus, and she has to decide how many times she can afford visiting them. She is willing to pay up to 10 CHF for the bus ticket the first time, up to 8 CHF the second time, and up to 6 CHF the third time.

1. If the price of a bus ticket is 7 CHF, how many times will she visit her friends, and what is her consumer surplus?
2. If the bus company offers three tickets for a flat rate of 19 CHF, should Mia accept the deal?
3. What is the highest price the company could charge for a three-ticket bundle while keeping Mia's consumer surplus unchanged?

Question 2: Equilibrium

The Eiger Express transports tourists from Grindelwald to the Eiger glacier. The Jungfrau railways estimate that the number of customers per year as a function of price can be estimated using the following demand function:

$$q = 2 - \frac{1}{73}p,$$

where q is the number of individuals (millions/year), and p is the price of the return ticket. As it is a popular destination, the strategy of the company is to adjust the price to the popularity according to the following supply function:

$$p = 27q + 46,$$

where p and q are defined as above.

1. At what price will the tickets be sold?
2. How many customers will use the system every year?