# Exercise Session 2 (PS1 Solutions)

## Principles of Economics I

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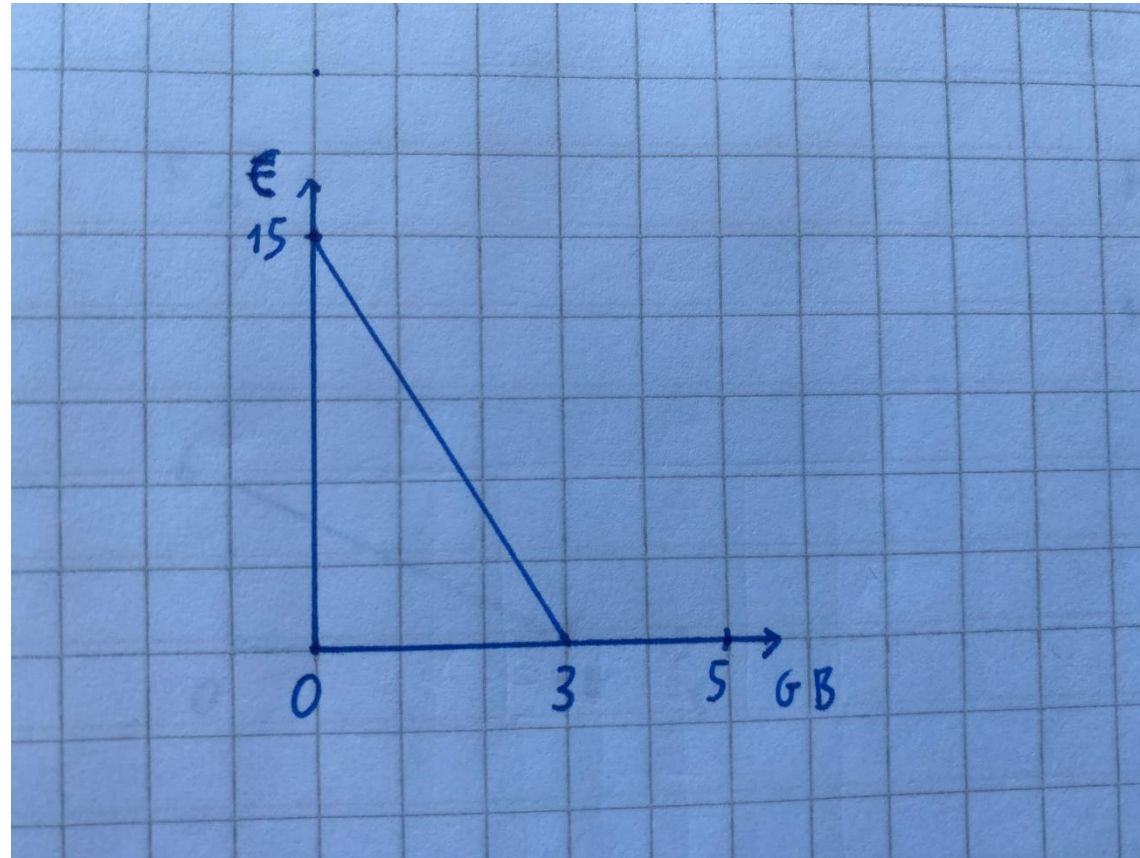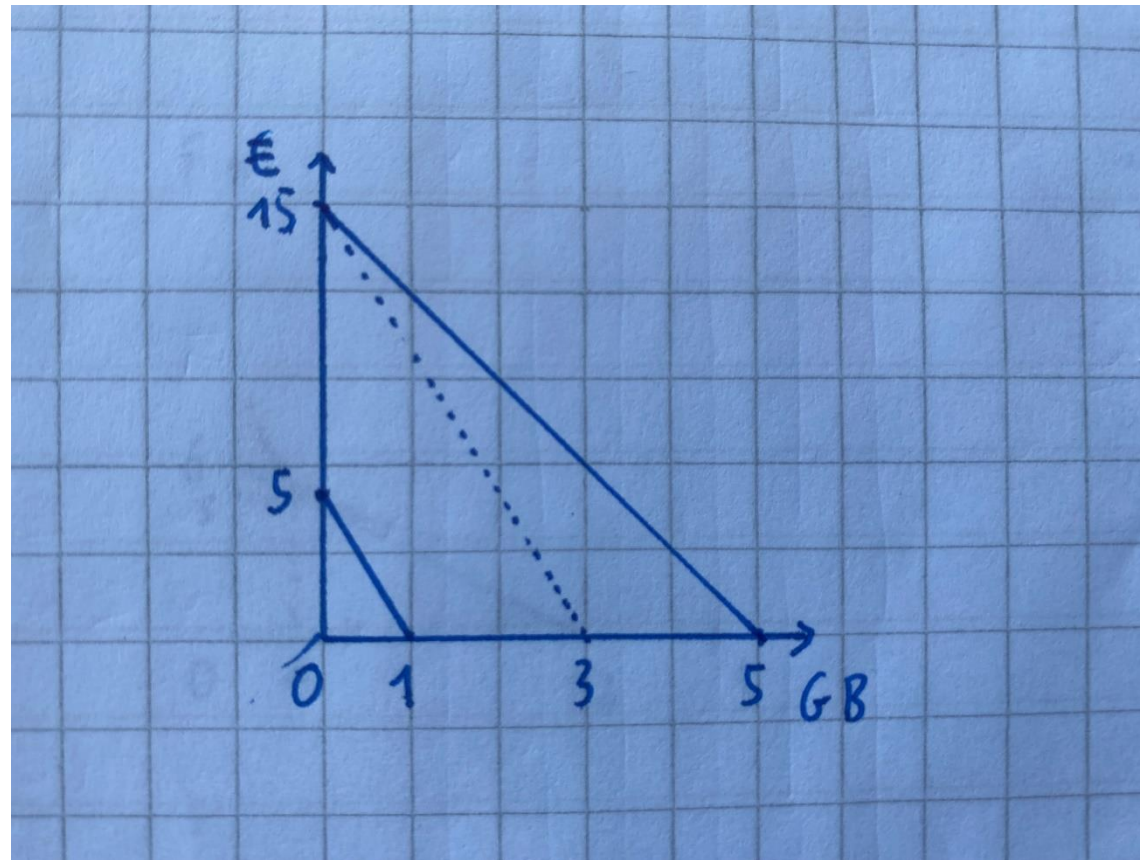
# Notice

- Please do not put your name **_as part of the submitted file's name_**

- Be lenient and award points for effort. No deduction for small mistakes.

- Email me if you need help in peer assessment or if you disagree with the peer assessment
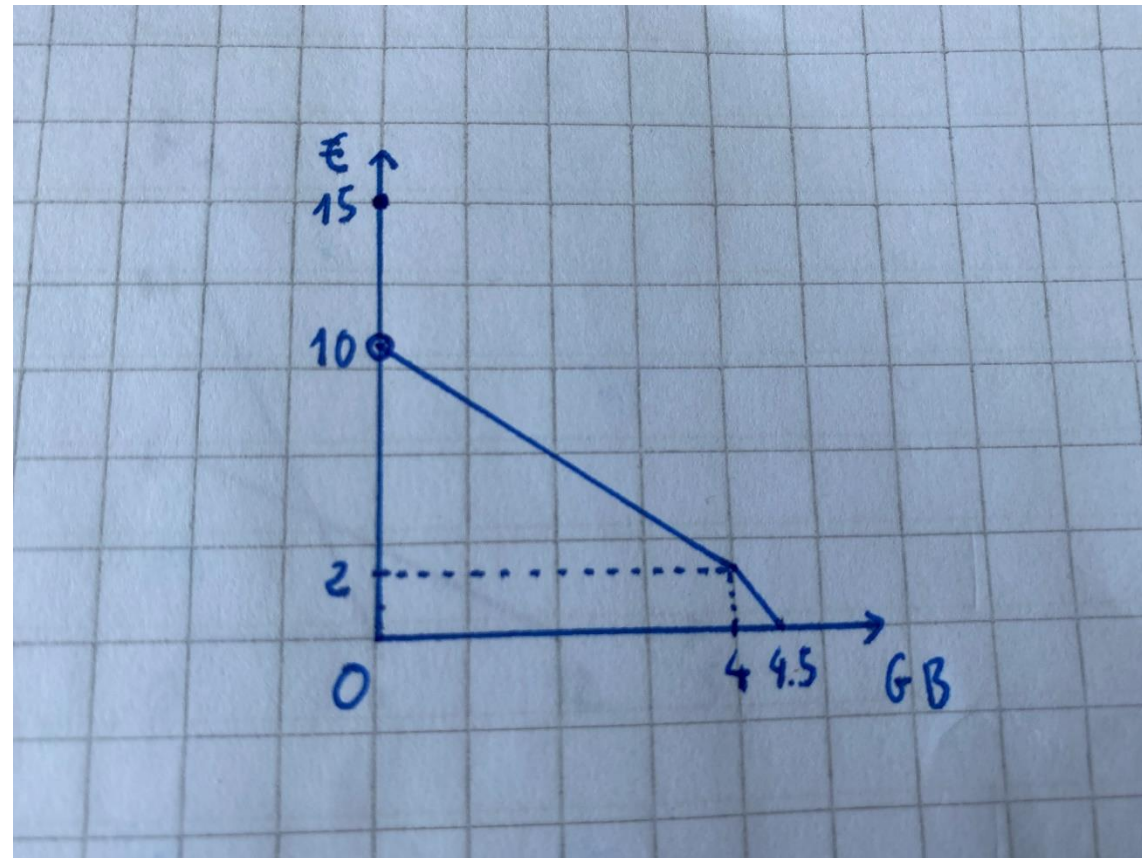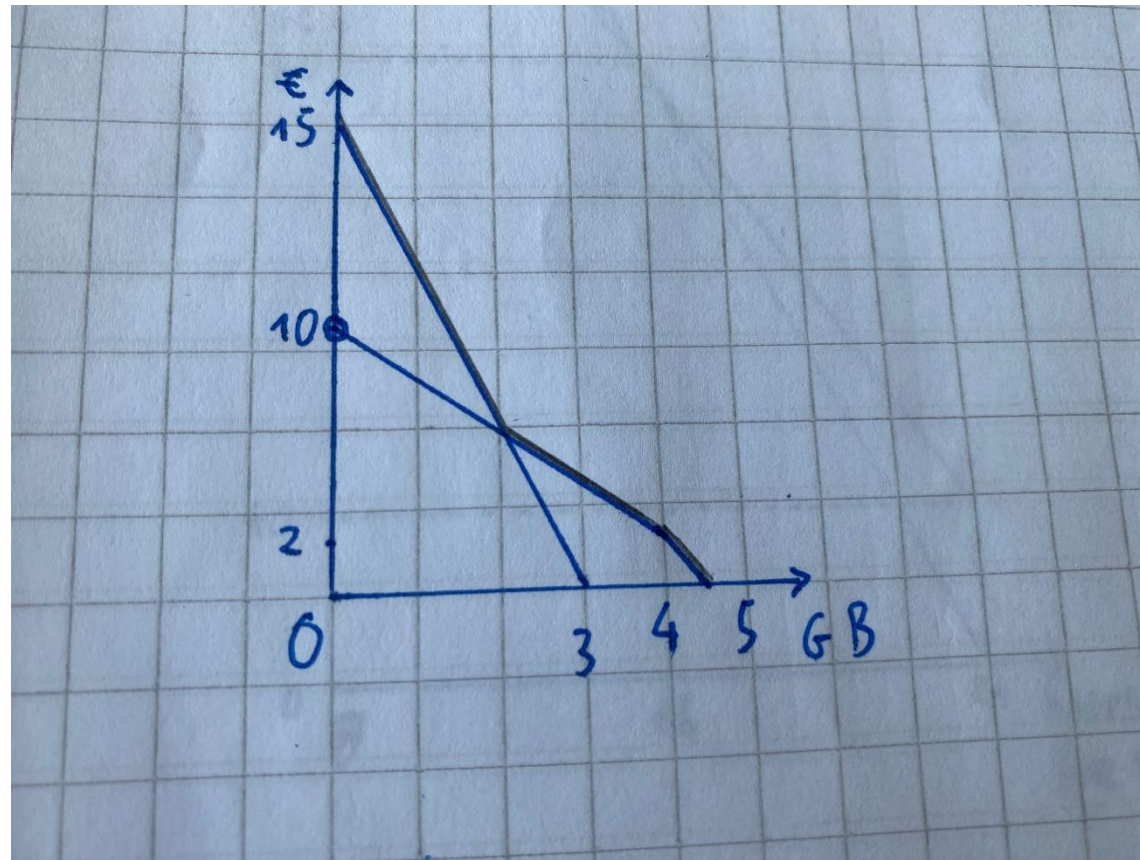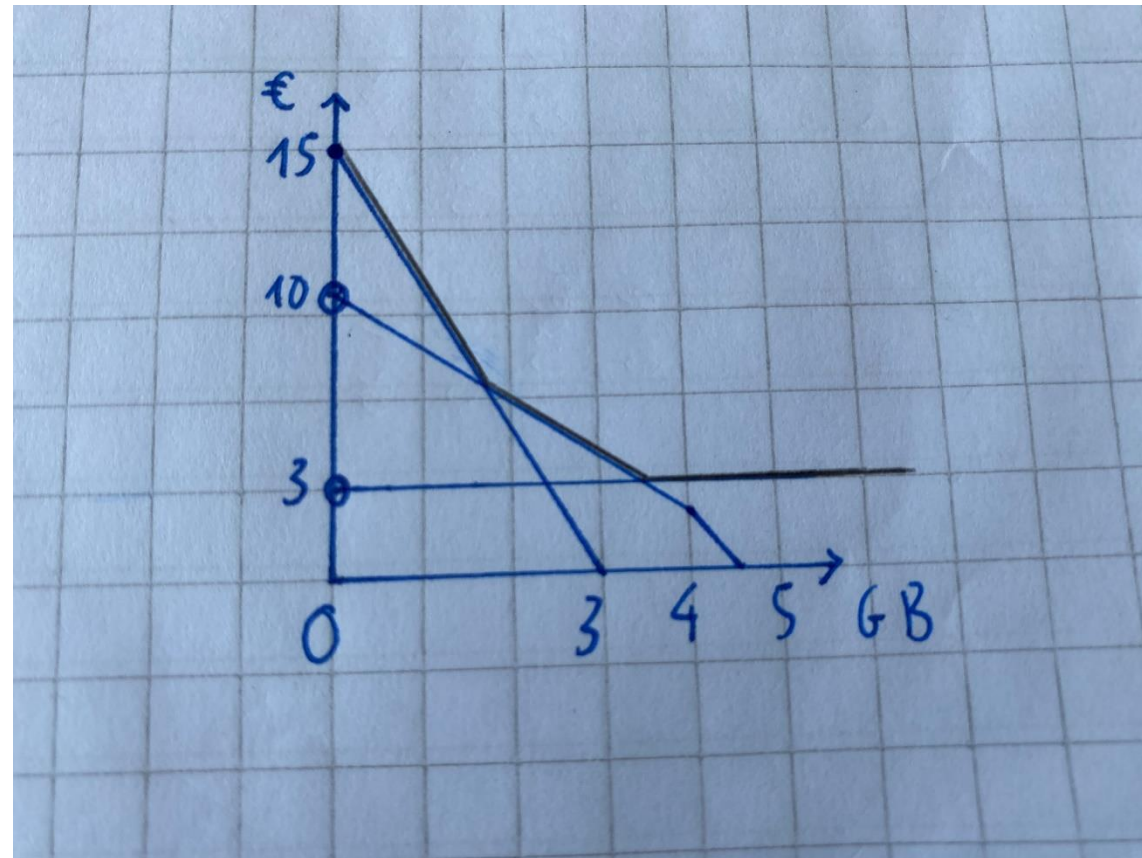
# Q1a

# Q1b

# Q1c

# Q1d

# Q1e

# Q2a

Because of diminishing marginal utility:

- At low levels of consumption of good x, one is willing to give up more of good y to be able to consume more of good x.

- At high levels of consumption of good x, one is willing to give up less of good y to be able to consume more of good x.

MRS is large at low numbers of GBs (it tends to infinity) and becomes smaller as you increase the number of GBs (it tends to zero).
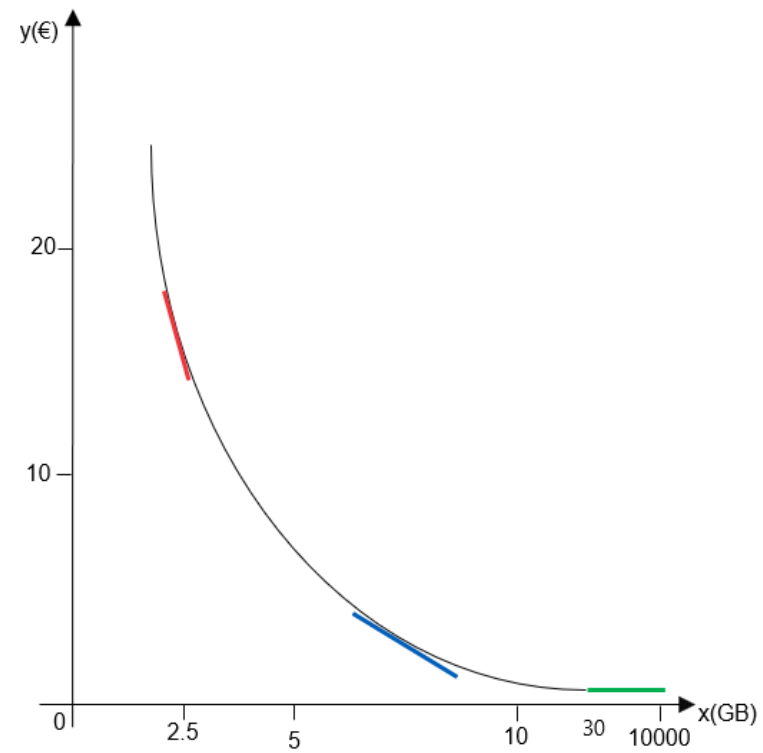
# Q2a
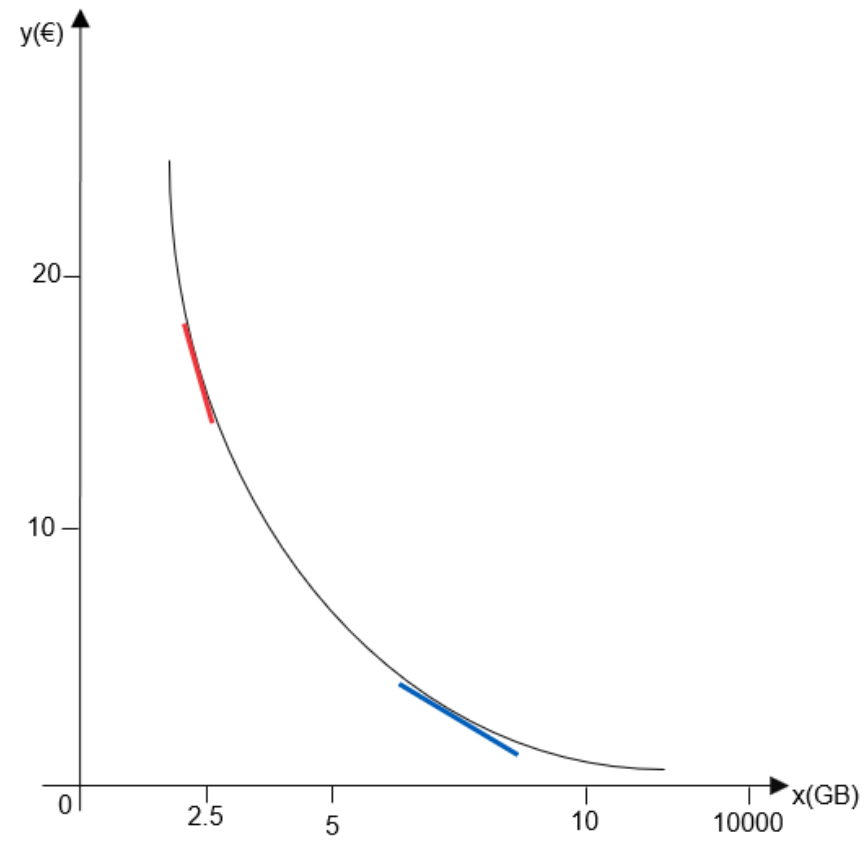
# Q2b

When x>30, the MRS is zero (there will be a horizontal line to the right of 30).

If you never use more than 30GB per month, you do not want to give up any other consumption in order to consume more internet.
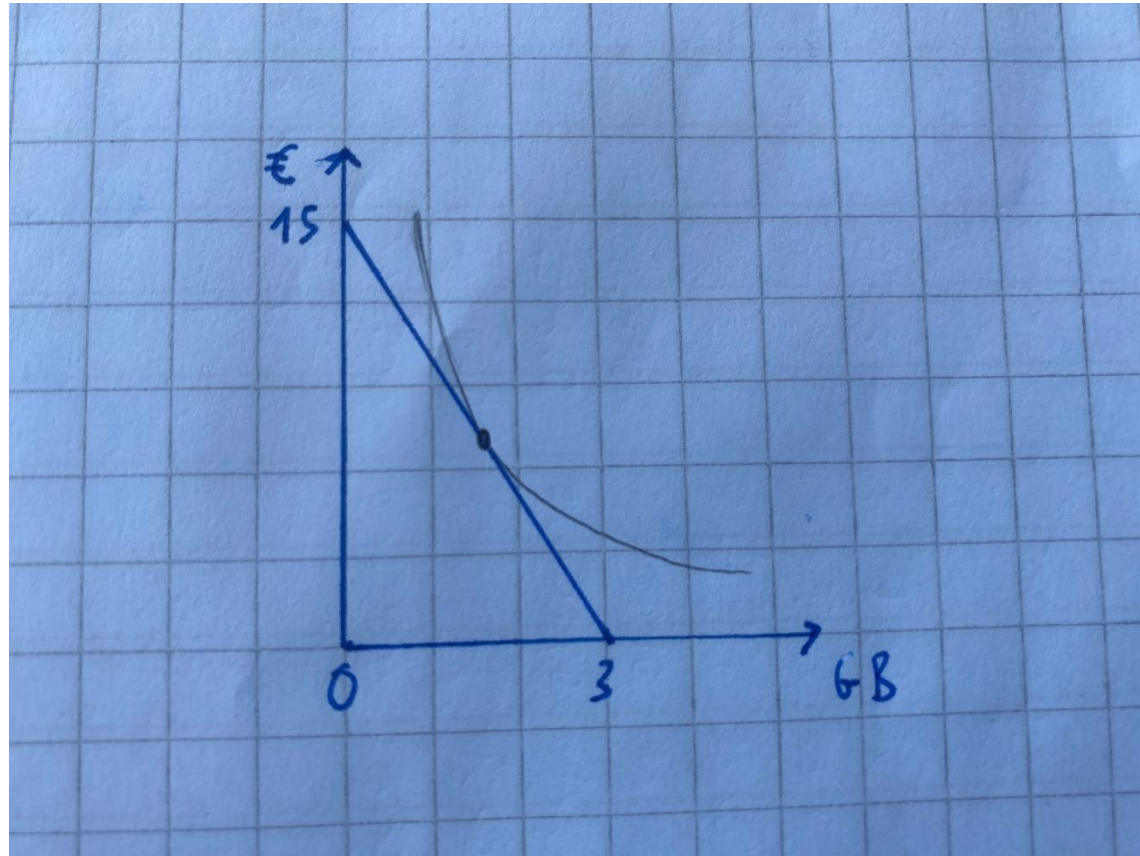
# Q2b

# Q2c

$$15 = 5 * x + y$$
$$y = -5x + 15$$

[It is ok to not write down the equation]

MRT is the absolute value of the slope of the budget constraint 5.

Optimal choice: point of tangency between the budget line and the indifference curve. It is the highest indifference curve that you can reach with the given budget and prices.
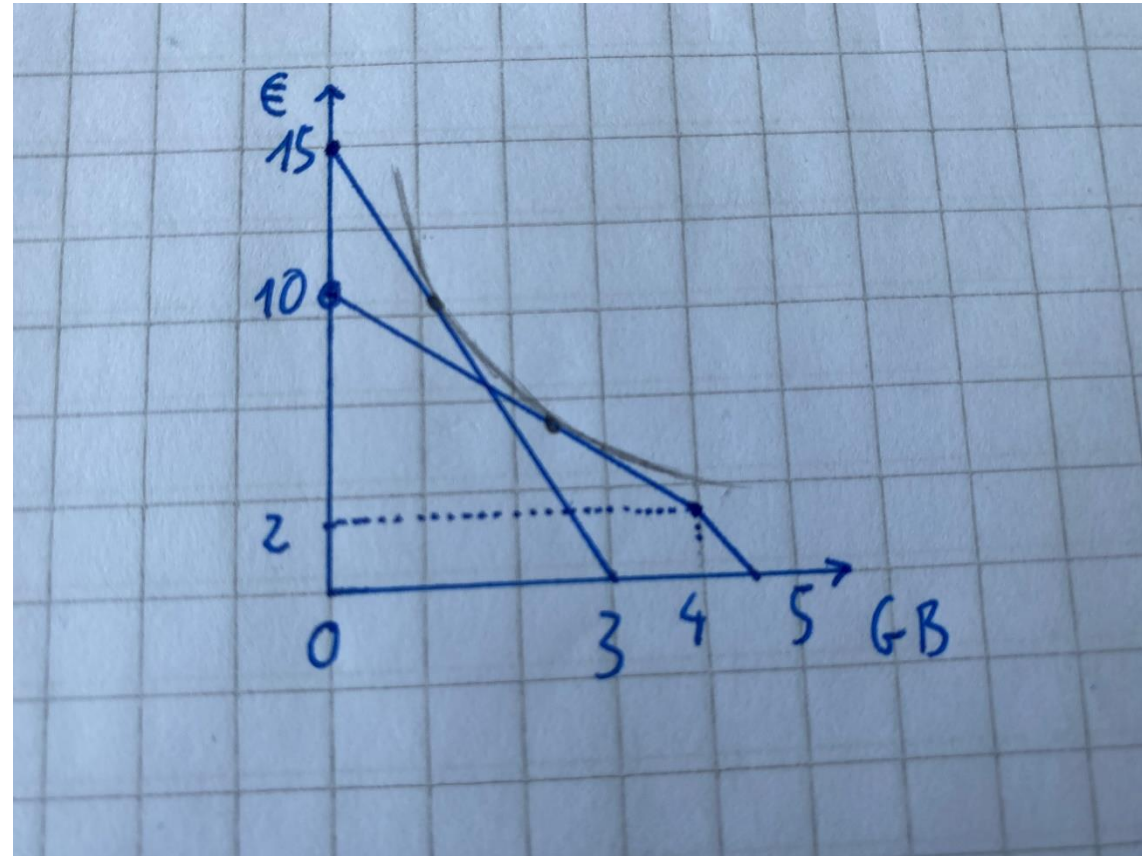
# Q2c

# Q2d

It is possible that the optimal choice under plan A and the optimal choice under plan C are on the same indifference curve. In this case, the consumer is indifferent between the 2 plans.
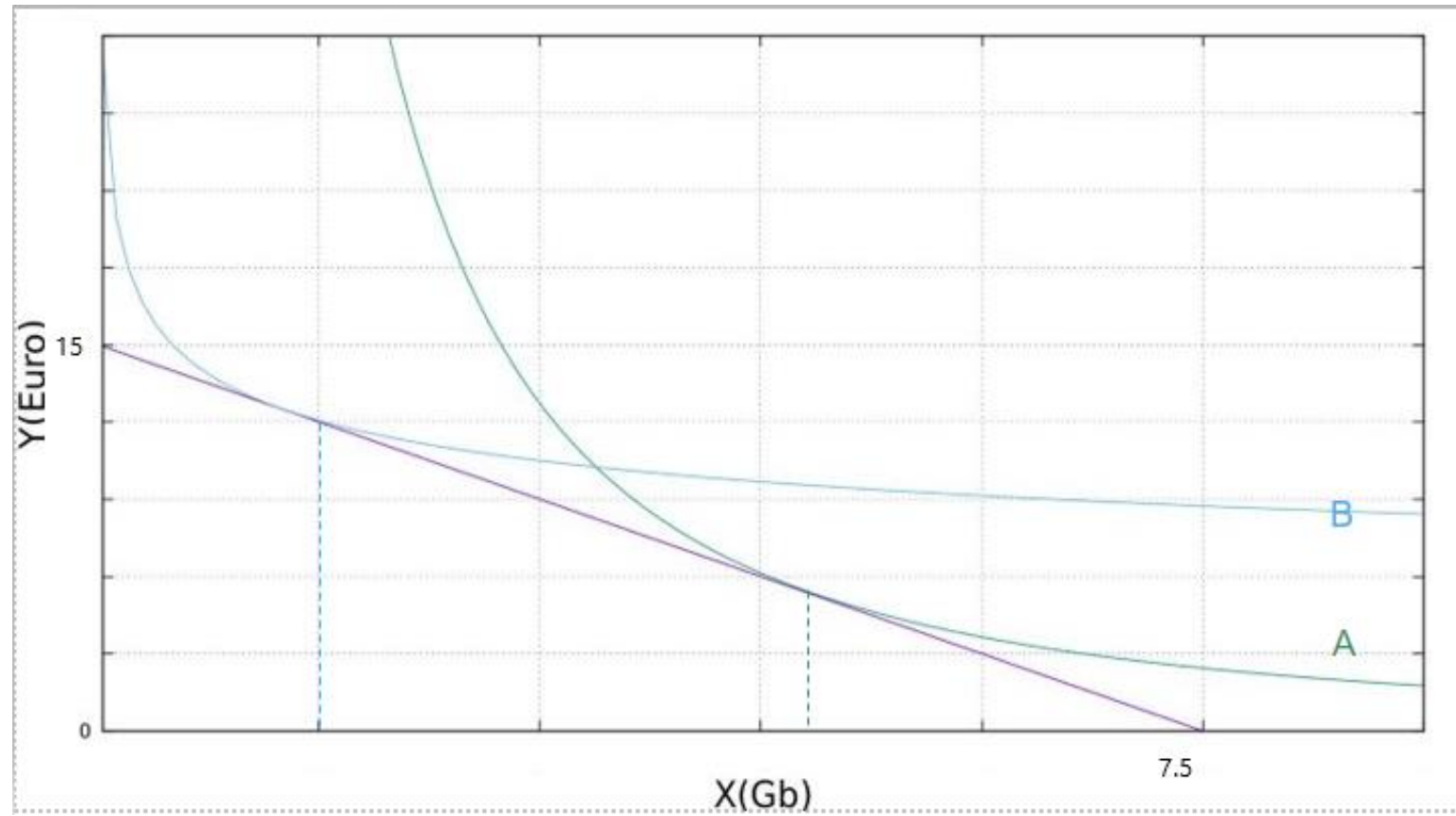
# Q2d

# Q2e

Ann likes data more than Bob: MRSa is higher than MRSb at all (x,y). The green line is steeper at every point: Ann is willing to sacrifice a lot of other consumption to increase her amount of GB.

# Q2e

# Q2f

Any reasonable answer should be accepted.

There is heterogeneity in the feasible set and indifference curves of consumers. Therefore, a mobile carrier has multiple plans to accommodate different types of consumers.

# Q3ab

a) $MRS_{o,a} = 1/4$

If you are willing to give up an apple for 4 oranges, it means you are willing to give up an orange for 1/4 apple

b) $MRS_{a,b} = MRS_{a,o} * MRS_{o,b} = 4*1/3 = 4/3$

If you are willing to give up an apple for 4 oranges, and you are willing to give up an orange for 1/3 bananas, it means you are willing to give up an apple for 4/3 bananas.

# Q3c

c) If you know MRSa,b MRSa,o MRSa,p you can calculate
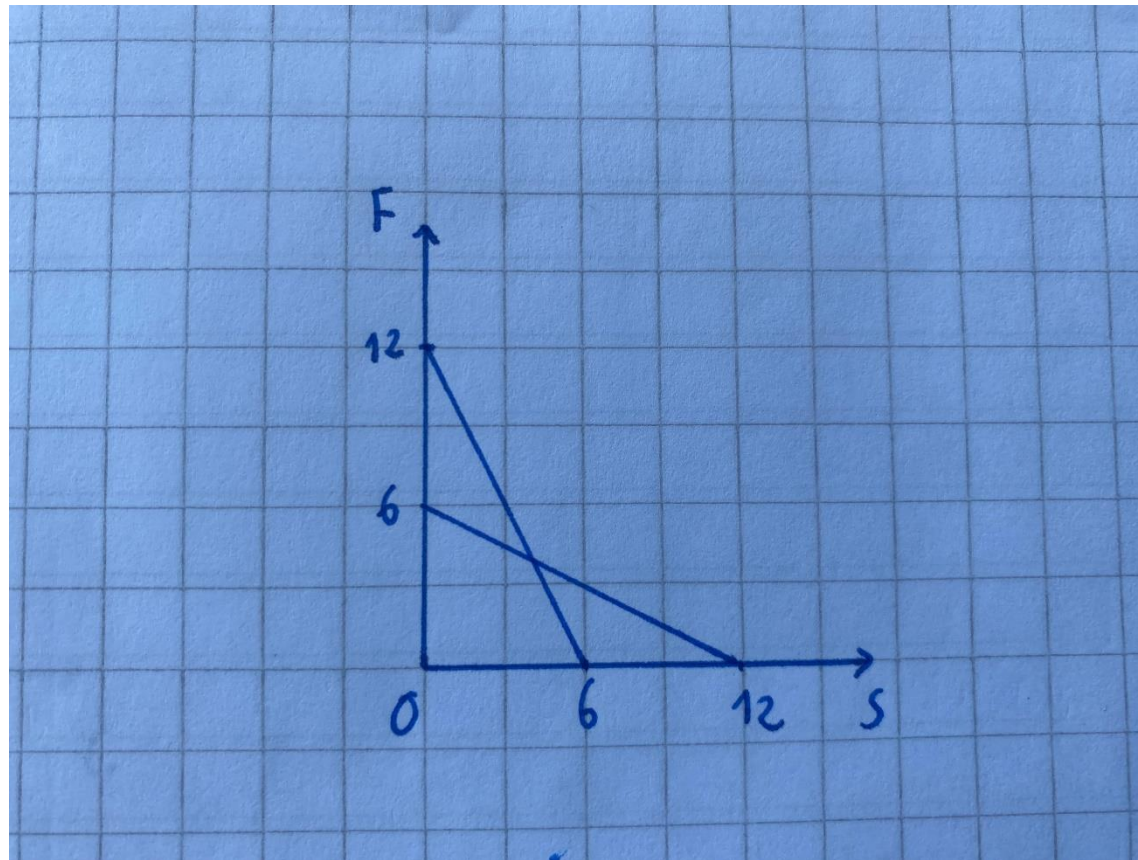
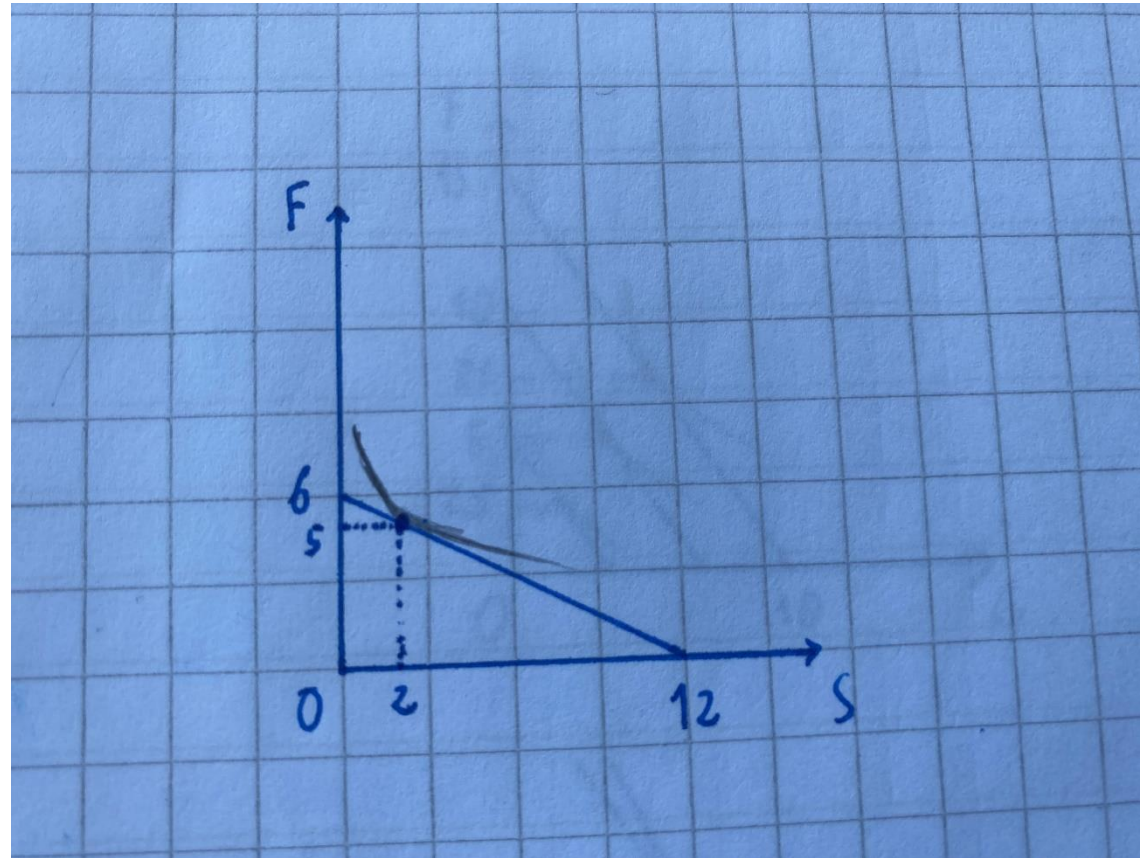MRSp,b= MRSp,a* MRSa,b

# Q4a
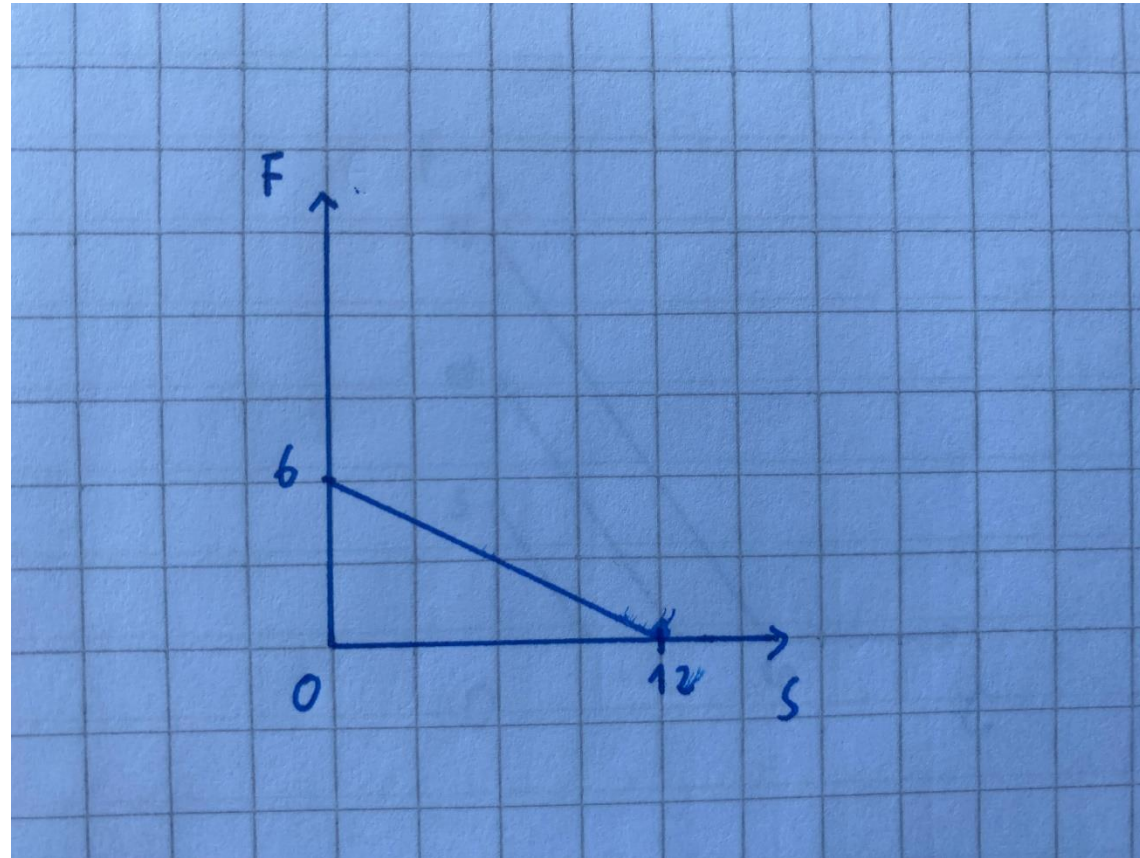
# Q4b

The budget set does not change when one doubles all prices and total budget.

# Q4c

# Q4d

# Q4e

The total budget is the same under part A and part C. In part C, the relative price of food is cheaper. Therefore, the agent's optimal choice is to allocate a larger share of budget on food and a smaller share of budget on shelter because of the substitution effect. [enough for full points]

However, because of the income effect, the absolute amount of food and shelter at the optimal point is undetermined. It depends on the shape of indifference curves.

[full points if the argument for higher/lower food and higher/lower shelter is correct]