

CONSUMER CHOICE

Problem #1

- a) Tom consumes only coffee (k) and cigarettes (c). A cup of coffee costs 6 *zloty*, a pack of cigarettes costs 3 *zloty*, and his monthly income amounts to 180 *zloty*. His utility function is given by $U(k, c) = k^2c^2$. How many packs of cigarettes does he smoke and how many cups of coffee does he drink each month?
- b) Bart's utility function over two goods (coca-cola and hamburgers) is described by $U(h, c) = \min\{5h, 6c\}$, with hamburger costing 5 USD and drink sold at 2 USD. His monthly pocket money amounts to 40. How many hamburgers and how many cans of coke will he buy? Present the solution analytically and graphically.
- c) Agatha only likes theater (t) and movies (m). One theater ticket costs 30 *zloty*, while cinema tickets are two times cheaper. Her utility function is given by $U(t, m) = 2m + 5t$ and her monthly income amounts to 90. How many times will she go out each month and what forms of entertainment will she choose? Present the solution analytically and graphically.

Problem #2

You are planning to visit the gym and the pool. In your closest neighborhood there are three gyms and a pool.

- In gym A you can train as much as you want paying 10 *zloty* per hour.
- Gym B offers membership cards – when you buy a weekly card for 30 *zloty*, you can train 8 hours a week for free and for every additional hour you pay 8 *zloty*.
- In gym C you have to buy a weekly entry card. It costs 20 *zloty* and gives you the chance to train for only 2 *zloty* per hour.
- One hour at the pool costs 15 *zloty*.

You can weekly spend 75 *zloty* on your sport activities. Two hours at the gym are for you equivalent to one hour of swimming (you burn the same amount of calories). Which gym will you choose?

Hint: Note that you can approximate the utility function by $U = \text{gym} + 2 \cdot \text{pool}$.

Problem #3

The Commune Council of a region with high unemployment would like to put an end to redistribution of clothing (C) and food (F) within the territory of this commune. Monthly packages for each person contain 10 units of clothing and 15 units of food. The price of clothing is 6 USD per unit, while for food it is 3 USD per unit. The Council decided to grant monetary benefits instead of providing these packages. Specify the minimum amount that must be paid by the commune per person in order to avoid protests of inhabitants. The utility function of a representative inhabitant of the commune can be approximated by $U = C * F$.

Problem #4

The owner of a Photo Shop introduces a new marketing strategy. He offers his clients discount cards. The owner of such a card can order prints for a lower price. The shop owner argues that those having a discount card will be able to order a greater amount of prints (assuming that they devote their entire remaining income for this purpose).

If you are indifferent whether you buy the card or not (i.e. your utility will not change when you buy the card), demonstrate, applying graphical analysis, that if you buy the card you will order more prints than in the situation when you do not buy it.

Assume that your preferences meet all axioms underlying the utility theory (i.e. are “well-behaving”). Furthermore, assume that your utility function includes two variables – z and x , where z denotes the number of prints you order and x – the value of the remaining goods that you buy.