Assignment No. 2
Microeconomics I (Prof. Alberto Iozzi)

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Please return your answers by the beginning of the second practice (22/11/2019).

Exercise 1

Let $u(c,h)$ be a *constant elasticity of substitution* utility function of the form

$$u(c,h) = \left(c^{\rho} + h^{\rho}\right)^{1/\rho} \tag{1}$$

where c is consumption and h leisure. An ordinary consumer finances her consumption through hours of wage labour, l, subtracted to her time off. Consumption is purchased at price p; wage is denoted by w.

1. Suppose $h = 1 - l$, find the optimal level of c, h and l;
2. sketch a graph, be careful when drawing the budget constraint;
3. what happens in case of wage increase? Redo the graph;
4. suppose the consumer wins National Lottery's *Set for life*; top prize is a generous monthly payment $\gamma > 0$ independent from l. How would you graphically represent this new situation? □

Exercise 2

A consumer has received an endowment $e = 1$ with which chooses a consumption bundle $(x_1, x_2) = \left(\frac{1}{2}, \frac{1}{2}\right)$ for any $p_{x_1} = p_{x_2}$.

1. Consider a different level of e, say e', and a different price combination $p'_{x_1} = 2$, $p'_{x_2} \neq p'_{x_1}$. The new bundle is $(x'_1, x'_2) = \left(\frac{3}{4}, \frac{1}{4}\right)$. If the consumer's demand satisfies *Walras law*, determine the value(s) of p'_{x_2} and e' that make the new bundle compatible with the *Weak Axiom of Revealed Preference.* □

Exercise 3

Let $u(x)$ be a *quasi-linear* utility function of the form:

$$u(x) = \alpha \cdot \sqrt{x_1} + x_2 \qquad \alpha > 0 \tag{2}$$

1. find the *ordinary demand functions*;
   (a) Are they going to be both greater than zero?
2. compute the *Indirect utility function* $v(p, w)$;
3. now assume that both $x_1^*(p, w) > 0$ and $x_2^*(p, w) > 0$, find the *Compensating Variation* for a change in p_{x_1};
   (a) find also the *Equivalent Variation*. □

References

- Mas-Colell, A., Whinston, M. D., & Green, J. R. (1995). *Microeconomic theory*. New York: Oxford University Press.
  - Chapter 3: **Classical Demand Theory**.