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EC9D3 Advanced Microeconomics
Additional Questions - Set 1

1. "The utility function $u(x)$ is concave in x". Explain why the only pertinent information contained in this statement is that $u(x)$ is *quasi-concave* in x.

2. In order to aid the poor, the Government introduces a scheme whereby the first 1 kg of butter a family buys is subsidized and the remaining amounts are taxed. Consider a family which consumes butter and is made *neither better off nor worse off* as a result of this scheme. Is it correct to state that the total amount of tax this family pays cannot exceed the subsidy it receives? Explain your answer.

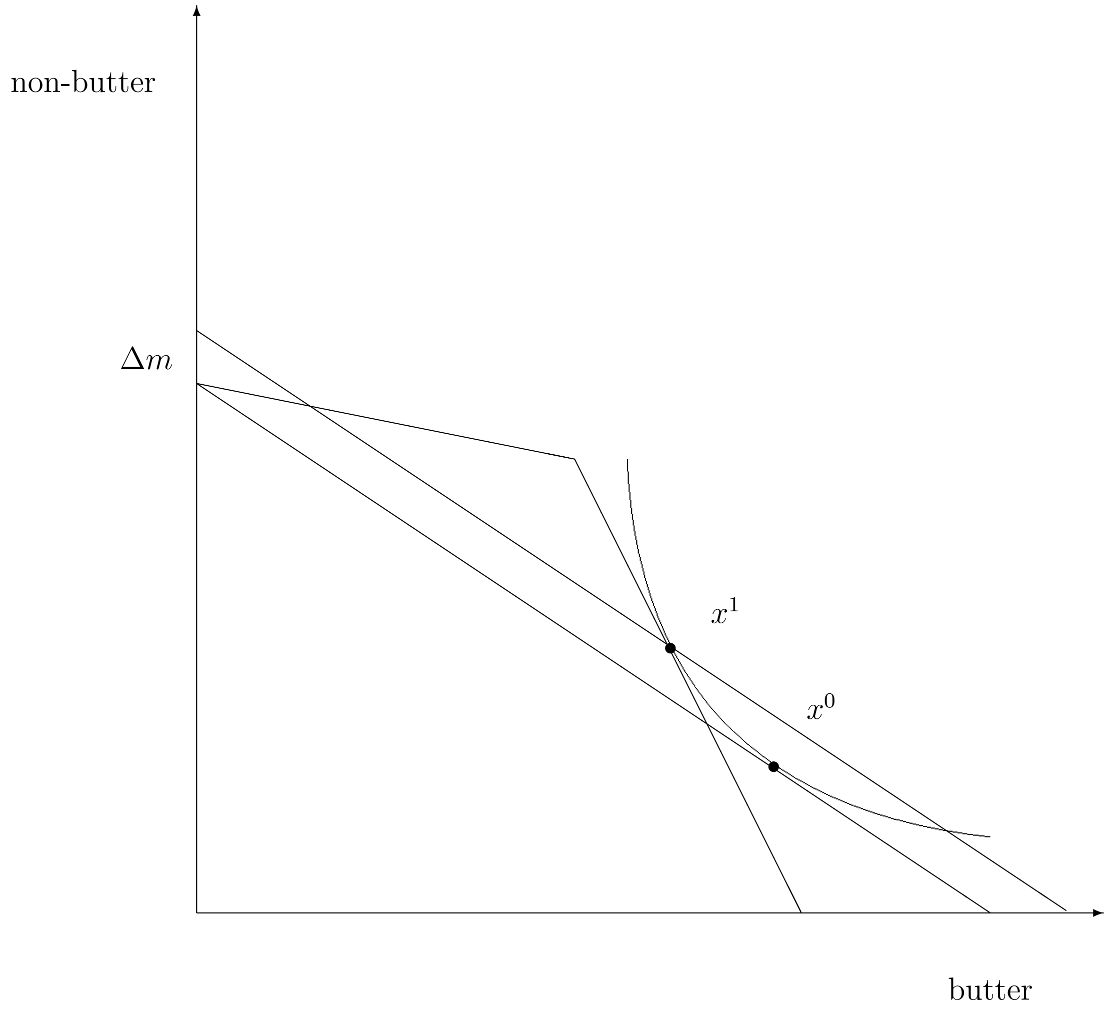
3. A rise in the price of milk leads herdsmen to increase their consumption of milk and to reduce the quantity of milk they send to the market. Is it correct to state that this shows that milk is an inferior good? Explain your answers.

4. You can only adjust your consumption of x_2 in the long run, but x_1 is flexible in the short run. Is it true that if x_1 is normal, then the demand for x_1 is more elastic in the long run than in the short run? Explain your answer.

Answers

1. Recall that utility is an ordinal measure defined up to any monotonic transformation. Consider a utility function $u(x)$ concave in x representing a given set of preferences. Apply some very sharply convex monotonic transformation to $u(\cdot)$ (e.g. $g(\cdot) = e^{u(\cdot)}$, or even $z(\cdot) = e^{g(\cdot)}$) eliminating in this way the concavity of the preferences representation. However, such transformations retain the quasi-concavity of the utility representation.

2. The family in question will move from the consumption bundle x^0 to the consumption bundle x^1 which was is not in the old budget set, hence the family necessarily has to receive a net subsidy $\Delta m \geq 0$, where $\Delta m = 0$ for indifference curves which have a kink at the tangency point that corresponds to the intersection of the old and the new budget line. (Cfr. Figure 1).

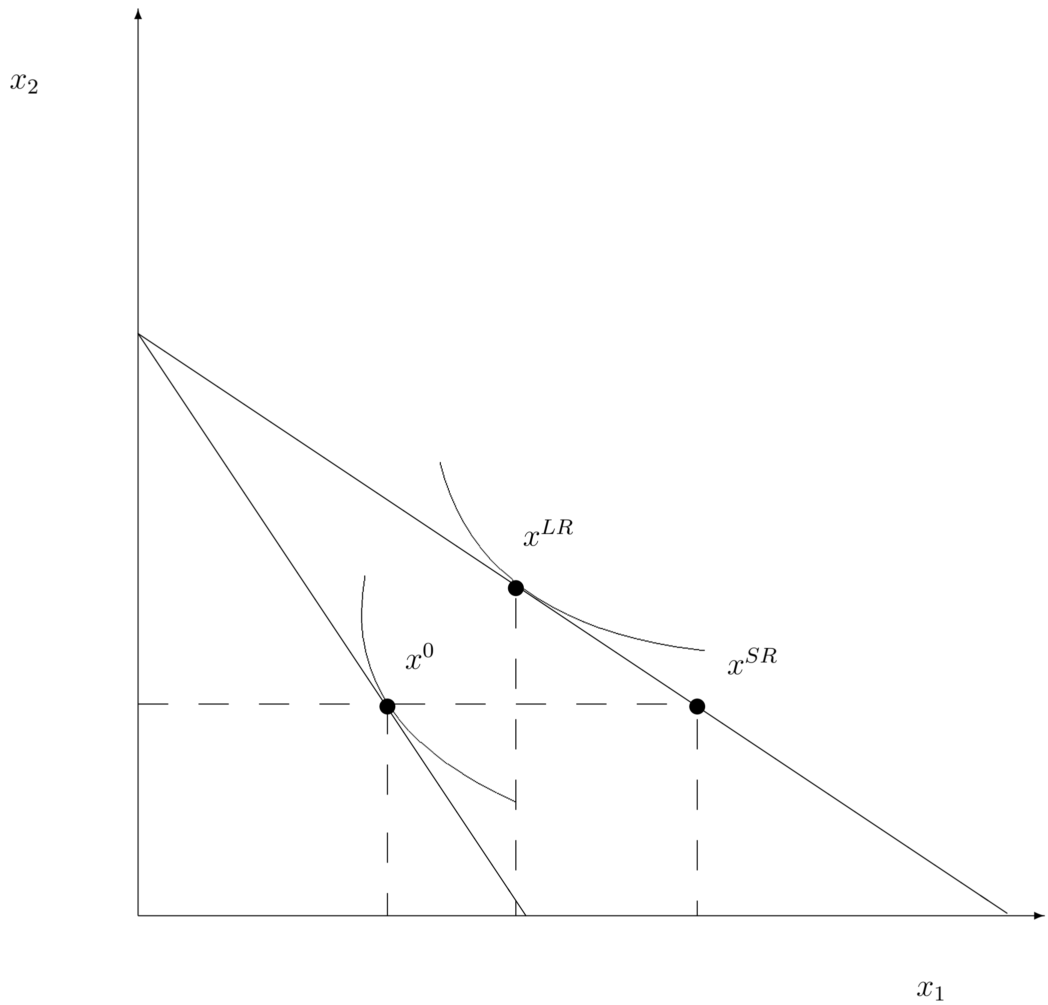


3. It is not correct. Consider, in fact, the Slutsky equation when the consumer owns an endowment:

$$\frac{\partial x}{\partial p} = \frac{\partial h}{\partial p} + \frac{\partial x}{\partial m}\,[\omega - x]$$

and $[\omega - x] > 0$ then $(\partial x/\partial p) > 0$ even though $(\partial x/\partial m) > 0$.

4. It is not true in general. Consider the example represented below.



In other words:

$$\eta^{SR}_{x_1,p_1} = \left(-\frac{p_1}{x_1}\,\frac{\partial x_1^{SR}}{\partial p_1}\right) > \left(-\frac{p_1}{x_1}\,\frac{\partial x_1^{LR}}{\partial p_1}\right) = \eta^{LR}_{x_1,p_1}.$$