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Assignment 2

EC9D3 Advanced Microeconomics

1. Consider the following partial information about a consumer's purchase. He consumes only two goods x and y.

	Year 1 Quantity	Year 1 Price	Year 2 Quantity	Year 2 Price
Good x	100	100	120	100
Good y	100	100	?	80

Over what range of quantities of y consumed in year 2 would you conclude:

(i) that the consumer is better off in year 1 than in year 2?

(ii) that he/she is better off in year 2 than in 1?

(iii) that his/her behaviour is inconsistent?

(iv) that x is an inferior good for this consumer?

2. Coffee and Tea are substitutes. Given your utility level, how does the amount you will be willing to pay to avoid being deprived of tea altogether depend on whether or not coffee is available? Prove your answer.

3. Consider a Cobb-Douglas Production function:

$$f(x) = x_1^\alpha x_2^\beta$$

where $\alpha > 0$, $\beta > 0$ and $\alpha + \beta < 1$.

(i) Derive the factor demands $x_1(p, w)$ and $x_2(p, w)$.

(ii) Derive the supply function $y(p, w)$.

(iii) Find the 3×3 matrix of marginal price effects. Confirm the signs (and, where appropriate, relative magnitudes) of these effects.

(iv) Find the profit function $\pi(p, w)$.

(v) Confirm that Hotelling's Lemma holds.

4. Let $f(x)$ be the production function for a firm with Constant returns to Scale technology. Suppose each factor x_i is payed its *value marginal product* $w_i = p(\partial f(x)/\partial x_i)$. Show that profits must be 0.