QA-pdf version

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2 questions on the "Exercise 2 : Cobb-Douglas Production Function" :

1. i don't get the answer the question 3 in this exercise when the power of $x^{0.5}$ is changed to $x_{0.5}$

- The output elasticity with respect to x_2 is defined as a ratio of marginal product and average product. We can write marg.product as:

$$mP_{x_2} = \frac{\bar{x}_1^{0.3}}{2x_2^{0.5}} = \bar{x}_1^{0.3} \times 0.5 \times x_2^{-0.5}$$

2) i don't get the answer of the question number 1 The MPx_2 and ApX_2 , can you give me the steps on how you get this answer .

- Answer

Question

Assuming input x_1 is fixed ($x_1 = 10$), how will vary *Total Productivity*, *Average* and *Marginal Productivity* of input x_2?

Answer

Keeping constant the first input x_1 to a level of 10 (that we can note $x_1 = \bar{x}_1 = 10$.), we study the productivity of the second input x_2.

- Total Product when x_1 is fixed is obtained substituting $\bar{x}_1$ in the production function.

$$Q(\bar{x}_1, x_2) = \bar{x}_1^{0.3} x_2^{0.5}$$

- Wich is a function of x_2. It gives the output quantities the firm can achieve with $\bar{x}_1$ for varying x_2. - Total product is increasing and concave with x_2.

- Marginal product of input x_2 is the supplementary output associated to a supplementary unit of input. It is measured by the first derivative of the TP with respect to x_2:

$$mP_{x_2} = \frac{\partial Q(\bar{x}_1, x_2)}{\partial x_2} = \frac{\partial \bar{x}_1^{0.3} x_2^{0.5}}{\partial x_2} = \frac{\bar{x}_1^{0.3}}{2x_2^{0.5}}$$

- mP_{x_2} is decreasing and convex with x_2: productivity of x_2 is non negative, increasing at a decreasing rate: diminishing returns of the input.

- Average product of x_2 is the average number of output per unit of input:

$$APx_2 = \frac{Q(\bar{x}_1, x_2)}{x_2} = \frac{\bar{x}_1^{0.3}}{x_2^{0.5}}$$

- AP_{x_2} is decreasing and convex with x_2

Question about the way to study the final exam for this class for a student who is studying economics for the first time.

- Is studying the lecture is enough with the exercices or should i make something extra?
  - *For the Part One of Basic Economics*: Yes, study textbook chapters and case studies notion and discussion.
  - You can also take a look at the past exams on Caseine where some solutions or partial corrections are available.
    - * you will find the type of questions that will fall.
    - * In the 2020 version of the exam definition questions, short answers questions will be tranformed in a MCQ type.