Microeconomics 1 – Part A: Individual decision making
Masters M1 IMMAEF & MAEF

TD – Wednesday, November 22, 2023

Producer Theory

The following exercises should be submitted on Wednesday, November 22.

Exercise 1. Let L be the number of commodities. A firm produces commodity L using the other $L-1$ commodities as inputs. $z := (z_1, ..., z_l, ..., z_{L-1}) \in \mathbb{R}_+^{L-1}$ denotes a generic bundle of inputs. Show that if the production function $f : \mathbb{R}_+^{L-1} \longrightarrow \mathbb{R}_+$ is **concave**, then the cost function C is a **convex** function of the output level.

Exercise 2. $L = 3$ is the number of commodities. The production function is

$$f(z_1, z_2) = (z_1)^\alpha (z_2)^\beta \text{ with } \alpha > 0, \ \beta > 0, \ z_1 \geq 0 \text{ and } z_2 \geq 0$$

Using the demand of inputs and the cost function already determined in the previous TD, determine the supply and the profit function of this firm [*Suggestion*: Distinguish the two cases: $\alpha + \beta < 1$ and $\alpha + \beta = 1$].