Microeconomics 1 – **Part A: Individual decision making**
Masters M1 QEM, IMMAEF & IMMAEF – DU MMEF

TD – Wednesday, October 24, 2018

Producer Theory

The following exercises must be submitted on Wednesday, October 24. A particular attention will be given to your presentation.

Exercise 1. $L = 3$ is the number of commodities. The firm produces commodity 3 using commodities 1 and 2 as inputs. The cost function is given by

$$C(p^1, p^2, \bar{y}^3) = 2\left(\bar{y}^3\right)^2 \left(p^1\right)^{\frac{2}{3}} \left(p^2\right)^{\frac{1}{3}}$$

- Show that the cost function is homogeneous of degree one in (p^1, p^2).
- Verify that this cost function is a convex function of the output level.
- Compute the supply and the profit function of the firm.

Exercise 2. 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.