Producer Theory, Consumer Theory, and Decision Theory

Problem Set 4

1. Calculate the cost function and the conditional demand functions for $y = \min \{\alpha x_1, \beta x_2\}$.

2. Under what assumptions do we have $\partial x_1 (w, y) / \partial w_2 > 0$ for a two-input and one-output firm? (Hint: Think!)

3. A profit-maximizing firm produces one output by using two inputs. Show, using the standard comparative static approach, that if w_1 increases then

    (a) $x_1(p, w)$ decreases (show where the standard assumptions of this model are used in your proof); and

    (b) Does $x_2(p, w)$ always increase? Give an economic interpretation of your result.

4. Prove that if the production function is strictly concave and $f(\mathbf{0}) = 0$, then f has decreasing returns to scale.