

Assignment 2

due: Thursday, March 15, in class

Problem 1: A consumer spends an amount of 216 NZD on buying n units of a good at price p . If the price was 1 NZD lower, then 216 NZD would in total buy 3 units more, all of them at the lower price. Find n and p .

Problem 2: Solve $\max xy + x + y$ subject to $x^2 + y^2 \leq 2$ and $x + y \leq 1$.

Problem 3: "Roy's Identity" in micro states that $x_i^* = -(\partial U^* / \partial p_i) / (\partial U^* / \partial I)$, where I denotes income and a * indicates optimized value. Prove this relationship using the envelope theorem.

Problem 4: Consider $\max U(x_1, x_2) = .5\ln(1 + x_1) + .25\ln(1 + x_2)$ subject to $2x_1 + 3x_2 = I$, and assume $I \geq 4$.

- a) Find the optimal demands and the Lagrange multiplier as functions of I .
- b) The optimal value U^* of $U(x_1, x_2)$ is a function of I as well. Find an explicit expression for $U^*(I)$, and show that $dU^*/dI = \lambda$.