

Midterm Exam: ECON 204A

Friday, November 4th

1. Matt is a utility-maximizing consumer with utility function $U(x_1, x_2)$, i.e., the consumer acquires only two goods. Suppose that p_1 and p_2 are the prices of the goods, and y is his income level. (You can make all the assumptions we made in class.)
 - (a) Show that Matt's marginal utility of income is positive (i.e., $\partial V(p, y) / \partial y \geq 0$). (15 points)
 - (b) Provide conditions on $U(x_1, x_2)$ so that Matt's marginal utility of income is decreasing (i.e., $\partial^2 V(p, y) / \partial y^2 \leq 0$). (20 points)
2. Suppose that Linda's utility function is $U(x_1, x_2) = \min \{x_1 - x_2, 3x_2 - x_1\}$. In addition, let $p_1 = 1$, $p_2 = 1$ be the prices of the goods and $y = 300$ be her income level.
 - (a) Find the consumption levels that maximize utility. (15 points)
 - (b) Find the consumption levels that minimize expenditure for a utility level of $u = -10$. (15 points)
3. A profit-maximizing firm uses only two-inputs, labor (L) and capital (K), with prices w and r respectively, to produce a single output y that can be sold at price p . Its production function is strictly concave. In addition, you know that, when the price of labor (w) increases, this firm always prefers to use less capital.
 - (a) What happens with L^* when the price of capital (r) increases? (20 points)
 - (b) What happens with y^* when the market price (p) increases? (15 points)