

EconS 301

Written Assignment #2

Due date: Tuesday, September 20th, 2016, in class.

Exercise #1

Part 1. Assume $p_1 = \$1$ and $p_2 = \$2$, and the consumer has income $I = \$10$. Find the consumer's budget constraint. Find utility-maximizing consumption bundles for the following utility functions:

(a) $u(x_1, x_2) = x_1 x_2$

(b) $u(x_1, x_2) = \sqrt{x_1} + 10x_2$

Exercise #2

Consider a consumer with Cobb-Douglas utility function

$$u(x_1, x_2) = x_1^{1/3} x_2^{2/3}$$

Assume that the consumer faces a price of \$10 for good 1, a price of \$20 for good 2, and a total income of \$100.

- a) Find the optimal consumption bundle that solves this consumer's utility maximization problem (UMP).
- b) Which utility level he can reach from the optimal bundle you found in part (a)?
- c) Assume now that the consumer seeks to reach the utility level you found in part (b). Find the optimal consumption bundle that solves his expenditure minimization problem (EMP).
- d) Does the optimal bundle found in part (a) coincide with that found in part (c). Explain.

Exercise #3

Consider a consumer with Cobb-Douglas utility function

$$u(x_1, x_2) = x_1^{1/2} x_2^{1/2}$$

Assume that the consumer faces a price p_1 for good 1, a price p_2 for good 2, and a total income of $\$I$.

- a) Find the optimal consumption bundle that solves this consumer's utility maximization problem (UMP).
- b) Does the optimal consumption of good 1 found in part (a) increase or decrease in its own price p_1 ? Does it increase or decrease in the price of good 2, p_2 ? And, does it increase or decrease in income, $\$I$?
- c) Does the optimal consumption of good 2 found in part (a) increase or decrease in its own price p_2 ? Does it increase or decrease in the price of good 1, p_1 ? And, does it increase or decrease in income, $\$I$?
- d) Find the optimal consumption bundle that solves this consumer's expenditure minimization problem (EMP), assuming that he seeks to reach a "utility target" of \bar{u} .
- e) Does the optimal consumption of good 1 found in part (d) increase or decrease in its own price p_1 ? Does it increase or decrease in the price of good 2, p_2 ? And, does it increase or decrease in the utility target the consumer seeks to reach, \bar{u} ?
- f) Does the optimal consumption of good 2 found in part (d) increase or decrease in its own price p_2 ? Does it increase or decrease in the price of good 1, p_1 ? And, does it increase or decrease in the utility target the consumer seeks to reach, \bar{u} ?