

Intermediate Microeconomics
Econ 3101, Section 002
Midterm Exam

Name: _____

Student Number: _____

1 Economic Concepts

1.1 Definitions (10 Points)

- Optimization principle:
- Monotonic preferences:
- Inferior good:
- Endogenous variable:
- Inelastic demand:

1.2 True or False (10 Points)

- _____ 1. With convex preferences, people prefer one good or the other, not a mixture of both.
- _____ 2. Giffen goods do not satisfy the law of demand.
- _____ 3. A positive subsidy results in the expansion of the consumer's budget set.
- _____ 4. Rationing poses no limit to what can be consumed in equilibrium.
- _____ 5. When assets that yield the same return have different prices, arbitrage occurs.

2 Economic Models

Question 1. *Consumer Choice.*

Suppose the representative consumer, Robinson Crusoe, has the following utility function: $u(x, y) = 7x + 2y$, where x and y denote the only two goods in the economy. Let p_x and p_y denote prices for x for y , and m income.

- (a) [4] Write down the budget constraint for this consumer.
- (b) [12] Derive Robinson's demand for both x and y .
- (c) [4] How much of x and y will Robinson consume if $p_x = p_y = 5$ and $m = 50$?

Question 2. *Income and Substitution Effects.*

Consider a Robinson Crusoe (i.e. single agent) economy with demand function $x(p_1, p_2, m) = (\frac{p_2 - m}{p_1}, \frac{p_1 + m}{p_2})$. The price of good 1 is denoted by p_1 , that of good 2 by p_2 , and income by m .

- (a) [6] Is good 1 inferior? What about good 2? Justify your answer.
- (b) [6] Are there Giffen goods in this economy? Justify your answer.
- (c) [6] Let $p_2 = 100$, $m = 20$, and suppose p_1 increases from 4 to 8. Find the change in the quantity demanded of good 1.
- (d) [12] For the change in part (c), calculate the magnitude of the Slutsky substitution and income effects.

Question 3. *Mispriced Assets.*

Consider two assets, x and y , where x yields a return p_x every period and y a return of p_y every other period starting today. The interest rate is r , where $r > 0$.

(a) [12] At what price should assets x and y be sold so that arbitrage is not possible? Write your answer in terms of p_x and p_y .

(b) [6] Suppose the return structure for asset y has changed so that it now yields p_y every other period half the time, and p_x the other half. (There is still no return to holding y every even period.) What will be the new price for this asset?

(c) [12] Something that has been common in the lead up to the current financial crisis has been the mispricing of assets. Suppose in our model that x was mispriced and that in reality it only yields p_x with certainty every other period. What relation between p_x and p_y must hold if x and y have the same price in equilibrium? Take the return structure for y to be that given in part (b).