

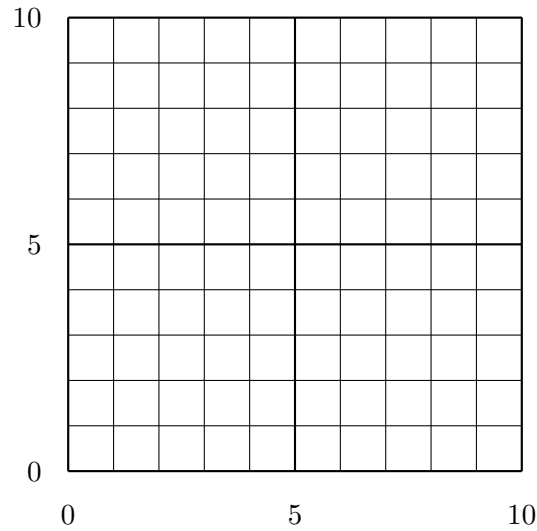
Intermediate Microeconomics (Econ 3101)
Assignment 1

Due **Monday, 22 June 2009, 10:00 am**. Students are welcome to discuss homework in groups, but each student must prepare and submit a unique assignment and note the names of other group members. All assignments must be neat and professional. Answer all parts of all questions.

1. Consider a commodity space with two goods, x and y , with prices p_x and p_y respectively. Suppose a consumer has income m .
 - (a) Suppose a rationing system prevents consumers from purchasing more than R on good x . Graph the budget set.
 - (b) Suppose instead that, in addition to their incomes, consumers are issued R coupons. Purchasers of good x must pay p_x and a coupon, but coupon can be traded at price p_c . Graph the budget set and write the budget equation for this situation.

2. Consider again a commodity space with two goods, x and y , with before-tax prices $p_x = 8$ and $p_y = 13$. Suppose a consumer has income of 90. Suppose a 25% ad valorem tax on good x and quantity tax of 2 on good y are imposed. Write the budget equation and graph the budget set.

3. Suppose a consumer's preferences over two goods satisfy transitivity, continuity, reflexivity, monotonicity, and strict convexity.



(a) Plot and label the following consumption bundles.

- A (7, 1)
- B (3, 5)
- C (2, 3)
- D (5, 3)
- E (8, 4)

(b) Assume A is indifferent to B . Rank all the bundles from most preferred to least preferred.

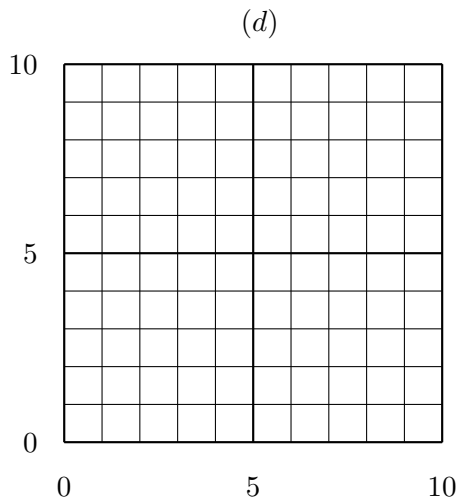
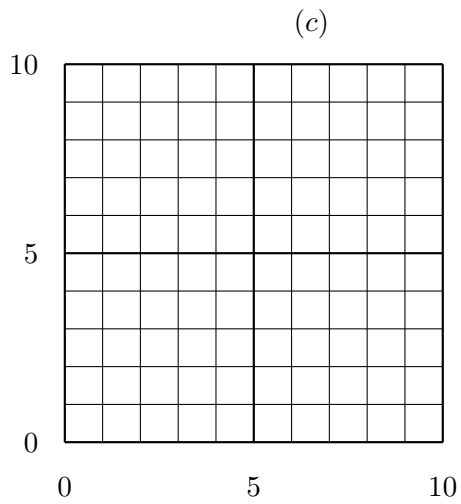
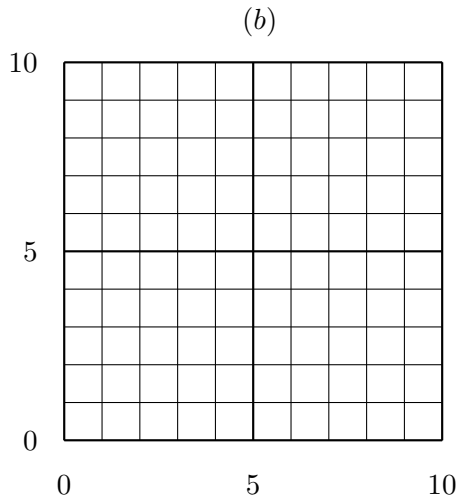
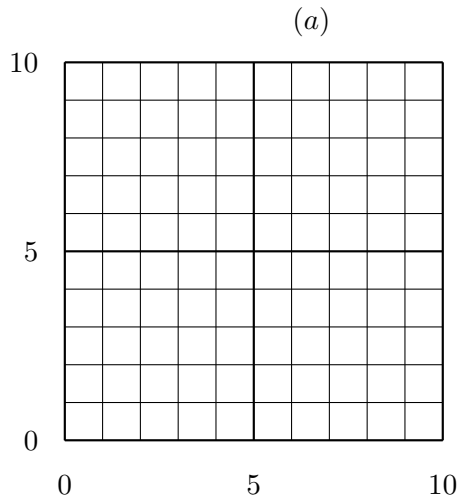
4. For each utility function, draw each consumer's indifferent curves through (2,2), (4,4), and (6,6).

(a) $u(x, y) = 3x + y$

(b) $u(x, y) = x + 3y$

(c) $u(x, y) = x^{\frac{1}{4}}y^{\frac{3}{4}}$

(d) $\min(2x, 4y)$



5. Find the Marginal Rate of Substitution between x and y for each of the following utility functions:

(a) $u(x, y) = \alpha x + \beta y$

(b) $u(x, y) = \alpha x + \beta(y - \gamma)^{\frac{1}{2}}$

(c) $u(x, y) = \alpha \ln(x) + \beta \ln(y)$

(d) $u(x, y) = x^\alpha y^\beta$

6. Suppose a consumer has preferences represented by $u(x, y, z) = 2x^2 + y^2 + z^2$.

(a) Rank the following consumption bundles from most preferred to least preferred: (5,3,3), (3,5,4), (4,4,4), (1,7,2), (6,2,1).

(b) Find the value of C such that the consumer is indifferent between (1,7,2) and (C,2,1).

7. Consider a consumer with income 100 and preferences represented by $u(x, y) = x^{\frac{1}{3}}y^{\frac{2}{3}}$. Suppose prices are $p_x = 10$ and $p_y = 8$.

(a) What is the consumer's expenditure on good x ?

(b) Derive the demand function for x .