

Discussion 5

Important Topics

- Exam Post-mortem
- Consumer Theory: Budget Constraints and Indifference Curves

Midterm 1 - Frequently Missed Questions

Exercise 1 (*Reference TA Handout 4, Question 1*) Billy sells gasoline and he knows the demand for his product is $P = 10 - 2Q$, where Q measures the quantity in gallons. He'd like to exaggerate the demand for his product to attract more investors, so he decides to report demand with quantity measured instead in half-gallons. What is the new demand equation given the change in units? Is this new demand curve more elastic?

Exercise 2 Consider the market for ice cream among UW students. UW undergraduates collectively have demand for ice cream represented by $P = 30 - Q$, where Q is the quantity of ice cream and P is the price. With a tighter budget constraint, UW graduate students have demand for ice cream represented by $P = 10 - 0.5Q$. The supply curve for ice cream is represented by $Q = 3P - 4$. What is the consumer surplus for UW graduate students?

Exercise 3 Suppose Robinson has 5 hours available, and he can catch 10 fish per hour. What is the shape of PPF with fishheads on one axis and fishtails on the other? (Hint: each fish he catches has one head and one tail).

Exercise 4 Suppose the government announces in early November that tax credits for electric cars will no longer be available beginning in December, meaning consumers will no longer get a discount on electric cars. What will happen to the demand for electric cars during the month of November?

Consumer Theory

Exercise 5 Suppose Michelle's income is \$100 per week and she only consumes oranges (good X) and apples (good Y). Each apple costs \$5 and each orange costs \$10.

1. Find the equation for Michelle's budget constraint and graph it.
2. Is the bundle (7, 6) affordable for Michelle? What about the bundle (7, 7)?
3. Now suppose that price of an apple increases from \$5 to \$10. Graph Michelle's new budget constraint and find the equation.

- Michelle got a raise and her income is now \$200. Find the equation for Michelle's new budget constraint and graph it.

Exercise 6 Mark spent \$80 to buy 10 cans of beer (good X) and \$5 bottles of wine (good Y) last week. Each can of beer cost P_X and each bottle of wine cost P_Y . Suppose he is utility maximizing agent.

- Now, the price of one bottle of beer has increased by \$1 and he has spent the same amount of money to buy 8 cans of beer and 5 bottles of wine. Find the price of beer before the change and the price of wine.
- What is the MRS before the price change and after the price change?

Exercise 7 Charles derives utility from pairs of black shoes (good X) and pairs of blue jeans (good Y). The marginal utility of a pair of black shoes is $MU_X = \frac{1}{X}$. The marginal utility of a pair of blue jeans is 1. He has an income of \$120. Suppose a pair of black shoes costs \$20, and a pair of blue jeans costs \$40. Which bundle should he consume if he wants to maximize his utility?