Economics 101
Fall 2010
Homework #3
Due 10/26/10

Directions: The homework will be collected in a box **before** the lecture. Please place your name, TA name and section number on top of the homework (legibly). Make sure you write your name as it appears on your ID so that you can receive the correct grade. Please remember the section number for the section **you are registered,** because you will need that number when you submit exams and homework. Late homework will not be accepted so make plans ahead of time. **Please show your work.** Good luck!

1. Luckland is a small economy and its economic activity is assumed to not affect world prices. The world price of blueberries is 10 dollars per box. The domestic supply and demand curves for blueberries in Luckland are given by:
Supply: $Q = 60 + 20P$
Demand: $Q = 1160 - 15P$

(a) Assume Luckland's economy is completely open to trade. Find the equilibrium price and quantity in Luckland's market for blueberries. How many boxes of blueberries are produced domestically and how many boxes of blueberries are imported?

(b) Now the government of Luckland implements an import quota of 400 boxes of blueberries. What happens to the price and quantity of blueberries consumed in Luckland's market?

(c) Calculate the changes in domestic consumer surplus and domestic producer surplus caused by the implementation of the quota described in part (b) relative to the levels of consumer surplus and producer surplus when the economy is open to trade. What's the license holder revenue and deadweight loss associated with this policy?

(d) From the domestic consumers' perspective, which trade policy—closed economy, open economy, or open economy with a quota—would they prefer? Which of the policies do the domestic producers prefer? Explain your answer.

(e) Luckland is considering replacing the import quota on blueberries with a tariff. If domestic consumer surplus and domestic producer surplus are to remain the same with the tariff as they are with the quota, what is the amount of the tariff?

2. Consider the market for cheesecake. The supply and demand curves are given by:
Supply: $P = Q + 2$
Demand: $P = 10 - (1/3)Q$

(a) Find the equilibrium price and quantity in the market for cheesecake.

(b) Find the price elasticity of demand and price elasticity of supply for cheesecake at the equilibrium. Use the point elasticity method for this calculation.

(c) Without doing any calculations – Is demand elastic, inelastic or unit elastic at a price of $4?

(d) Use the arc elasticity formula (midpoint method) to calculate the price elasticity of demand between prices of $2 and $4. Is demand elastic or inelastic in this portion of the demand curve?

(e) Use the arc elasticity formula (midpoint method) to calculate the price elasticity of demand between prices $6 and $8. Is demand elastic or inelastic in this portion of the demand curve?

3. Suppose Blair consumes two goods, good X and good Y. Good X costs $3 each and Good Y costs $2 each. Blair's income to spend on good X and good Y is $60.

(a) Draw Blair's budget line on a graph and label this budget line BL1. Measure good Y on the y-axis and good X on the x-axis. Include the numerical value of the y-intercept and x-intercept. What is the equation for Blair's budget constraint?

(b) Suppose Blair consumes both X and Y, what must her marginal rate of substitution of good X for good Y be at her optimal consumption bundle?

(c) Suppose the price of good X doubles while the price of good Y and Blair's income are unchanged. Draw Blair's new budget line, BL2, on your graph. What is the new equation for the budget line?

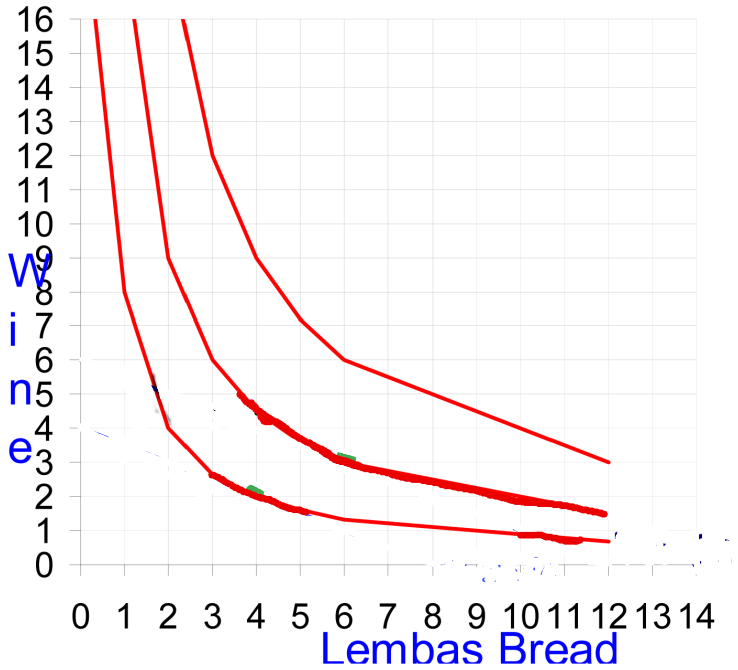
(d) Suppose Blair's income decreases to $48 and prices are the same as in part (a). What is the slope-intercept form for this new budget line, BL3?

(e) Now suppose that there is a serious inflation that causes the price of everything (both prices and income) to double from their original levels. What will happen to her optimal consumption bundle? (Describe it in terms of real and nominal prices.)

(f) Prices and Income are the same as in part (a). Which of the following combinations can Blair afford?

(1) 6 X and 22 Y. (2) 10 X and 13 Y. (3) 12 X and 12 Y.

4. Frodo eats lembas and wine. His indifference curves are illustrated in the graph below. Suppose the prices of lembas and wine are Pl=$5 and Pw=$10.



(a) Suppose Frodo has an income of $40. In a graph with wine of the y-axis draw in Frodo's budget constraint and label it "BC(I=40)". What is the slope of this budget constraint?

(b) At this income and given Frodo's indifference curve map, what is Frodo's optimal consumption bundle?

(c) What's the marginal rate of substitution at the optimal consumption bundle?

(d) Suppose prices remain the same but Frodo's income increase to $60. Illustrate the new budget constraint, BC(I = 60) on your graph. What is the new optimal consumption of lembas bread and wine for Frodo given his new budget constraint and his indifference curve map?

(e) From comparing your answers in part (b) and part (d), can you determine whether Frodo considers wine a normal good and lembas an inferior good? Explain your answer.

(f) If there are only two goods that Frodo consumes, is it possible for both goods to be inferior?

5. Ted loves skiing and wants to go as often as he can afford to. For each day he skis, he needs to rent skis and buy a lift pass. Ski rentals are $10 a day and lift passes are $40 a day. He has $200 to spend on skiing this winter.

(a) Draw Ted's budget constraint for the number of ski rental days and the number of lift pass days on a graph. In your graph, measure ski rentals on the horizontal axis and lift tickets on the vertical axis. What is his optimal consumption bundle? (Hint: you will need to think about what Ted's indifference curves look like to answer this last question.)

(b) Illustrate his optimal consumption bundle and draw Ted's indifference curve through it on your graph.

(c) Draw his indifference curve that includes the consumption bundle (2 ski rentals, 2 lift tickets) and draw his indifference curve that includes the consumption bundle (6 ski rentals, 6 lift tickets) on your graph. Label these indifference curves clearly.