Exam 1
ECNS 204 – Microeconomics
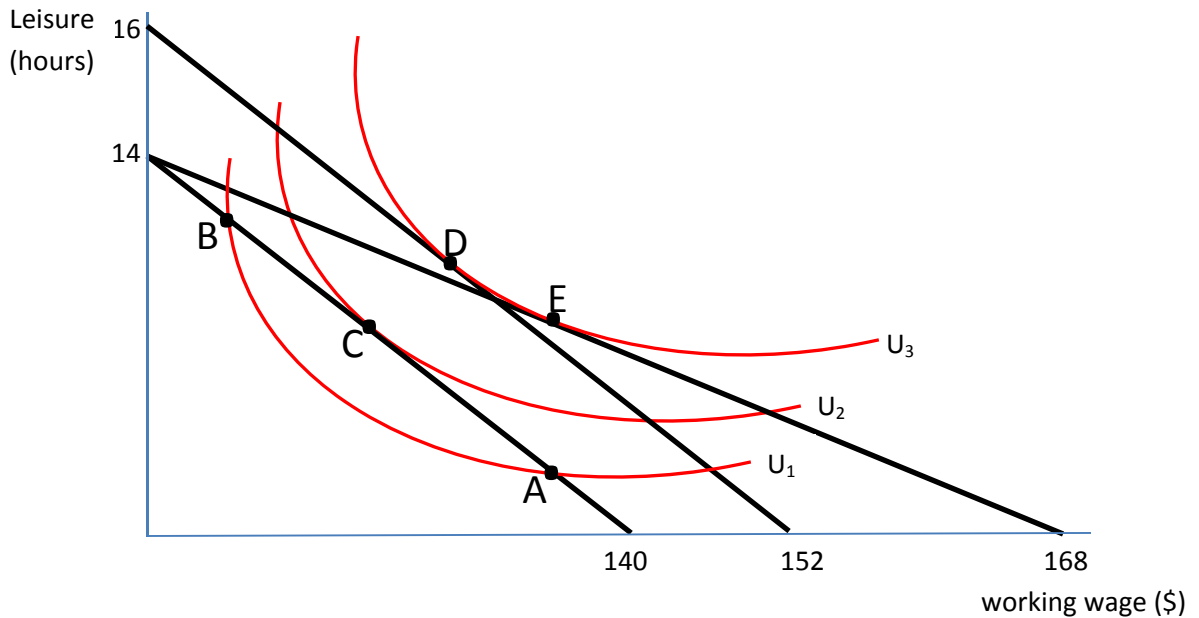Spring 2013
Instructor: Eric Belasco

Name _____Belasco - KEY_____

1. **(40 points, 5 points each)** For the following questions, refer to the figure below.

a. Assume there are 14 hours of waking hours which you need to devote to work and leisure. Your initial wage is $10 per hour.

   i. What are the horizontal and vertical intercept points associated with the implied budget constraint? **(5 points)**

   The horizontal intercept is $140 [=14*$10]. The vertical intercept is 14 hours.

   ii. Is point A the utility maximization point? Explain why or why not. **(5 points)**

   Point A is NOT the utility max point. It is feasible but not utility maximizing.

iii. Is point C the utility maximization point? Explain why or why not.
(5 points)

Point C is the utility max point since it provides the most utility given the budget constraint. We know this because it's at the tangency point.

iv. Is point D the utility maximization point? Explain why or why not.
(5 points)

Point D is NOT a feasible point given the budget constraint.

b. Now assume that a minimum wage law is implemented which effectively increases your hourly wage to $12 per hour.
   i. What is the new utility maximization point? **(5 points)**

   The budget constraint changes with a new horizontal axis at $169 [=$12*14] with an unchanged vertical axis. Point E is the utility max point.

   ii. Explain (in words) the difference between the income and substitutions effects in this particular application. **(5 points)**

   The income effect corresponds to the expansion of the budget constraint or increase in purchasing power. Higher utility can be achieved thorough more consumption of leisure, made possible by higher wages.
   The substitution effect corresponds to the change in time allocation due to the relative price of goods, or the increased opportunity cost associated with leisure. A higher cost of leisure, leads to substitution towards working.

   iii. Using the figure above, show the movements related to the income and substitution effects. **(5 points)**

   Sub effect is from point D to E, while the income is from C to D. The move from C to E is the composition of these two movements.

iv. Based on the figure above, is leisure a normal or inferior good? Explain your answer. **(5 points)**

The income effect (points C to D) results in an increase in leisure hours. In this application, it is a normal good.

2. **(30 points, 5 points each)** Assume Bridger Bowl sold 10,000 lift tickets this year. In an effort to increase revenues next year, Bridger Bowl (the local ski area) is considering an increase in the price of lift tickets from $49 to $52. As a result, they expect the number of lift tickets sold next year to fall by 8.0%.

   a. What is the implied price elasticity of demand for lift tickets at Bridger Bowl? **(5 points)**

$$E_p = \frac{\%\Delta Q_d}{\%\Delta P} = \frac{-0.08}{(52-49)/49} = \frac{-0.08}{0.061225} = -1.307$$

   b. Is the demand for lift tickets at Bridger Bowl elastic or inelastic? **(5 points)**

   Since $|E_p| > 1$, demand is said to be elastic

   c. What characteristics about Bridger Bowl might lead to the type of elasticity in your response to part (b)? **(5 points)**

   Many close substitutes, high % of income spent on skiing, lack of loyalty to BB

   d. Assuming the management at Bridger Bowl is only interested in maximizing revenues, would you recommend they proceed with increasing rates next year? Explain. **(5 points)**

   No. Total revenue would be reduced. To illustrate, revenue last year would be $490,000 [=$49*10,000] and revenue next year would be 478,400 [=$52*(10,000*(1-0.08))].

3

e. What would you anticipate the sign of the cross price elasticity between prices at Bridger Bowl and lift tickets sold at Moonlight Basin (a nearby ski area) to be? Should Moonlight Basin expect to sell more lift tickets next year? **(5 points)**

I would expect the cross price elasticity to be positive since price increases at Bridger Bowl are likely to lead to increased lift tickets sold at Moonlight Basin. The two appear to be substitutes.

f. A member on the board of directors says that because all incomes have increased by 5% that they are likely to maintain the number of lift tickets sold. Luckily, last year the income elasticity for lift tickets at Bridger Bowl was estimated to be 1.4. What does this income elasticity imply about the expected number of lift tickets sold next year? *(Ignore the anticipated change in price for this part)* **(5 points)**

With an income elasticity of 1.4, this implies that for every 1% increase in income a 1.4% increase in quantity demanded would be expected. Thus, we expect that a 5% increase in income would be accompanied by a 7% increase in lift tickets sold (assuming constant lift ticket prices).

ESSAY. Select <u>three</u> of the questions below to answer. Write your answer in the space provided. Clearly indicate which question you are answering with each response. When necessary, clearly draw supply and demand curves with clearly labeled axis and curves. Be as specific as possible with your response. Also, if you provide more than three responses, only the first three will be graded. (10 points each)

3. A federal law is imposed on gun sellers that all buyers of firearms need to have a background check prior to any transaction. Sellers are expected to pay for the background check which costs approximately $1.00 per sale. What is expected to happen to the equilibrium price and quantity of firearms sold in the United States?

    The cost of background checks could be analyzed similar to an excise tax. This results in a shift as shown below. The equilibrium quantity falls from Q_0 to Q_1, while the price that suppliers effectively collect is moved to PS_1. The equilibrium price, paid by consumers moves to upward from P_0 to PD_1.
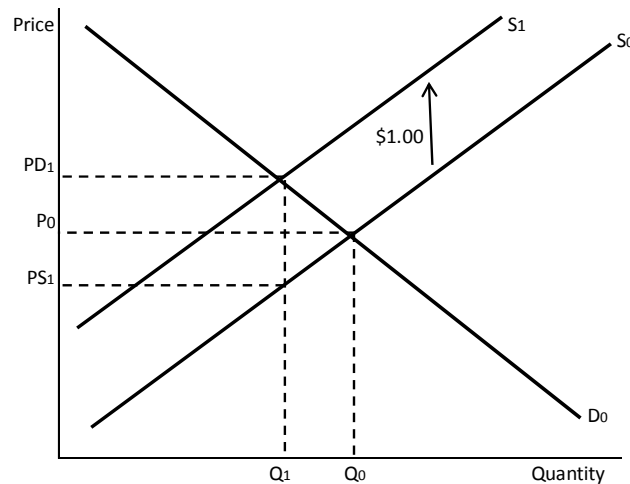
4. Assume the price elasticity of demand for an education at Montana State University is shown to be inelastic for in-state students and elastic for out-of-state students. A proposal is made to increase both in-state and out-of-state tuition by 5% next year. Explain how the number of in-state and out-of-state freshman is likely to be impacted next year. How will they be impacted differently based on the different shapes of their demand curves?

Since demand for an MSU education is inelastic for out-of-state students, there would likely be a larger than 5% reduction in out-of-state incoming freshman and a smaller than 5% reduction in in-state incoming freshman. If we normalize out-of-state and in-state rates, then a price increase would have a much larger impact on freshman from out-of-state as shown below. This is mainly the result of the different slopes of their demand curves. This could also be illustrated with own price elasticity calculations.
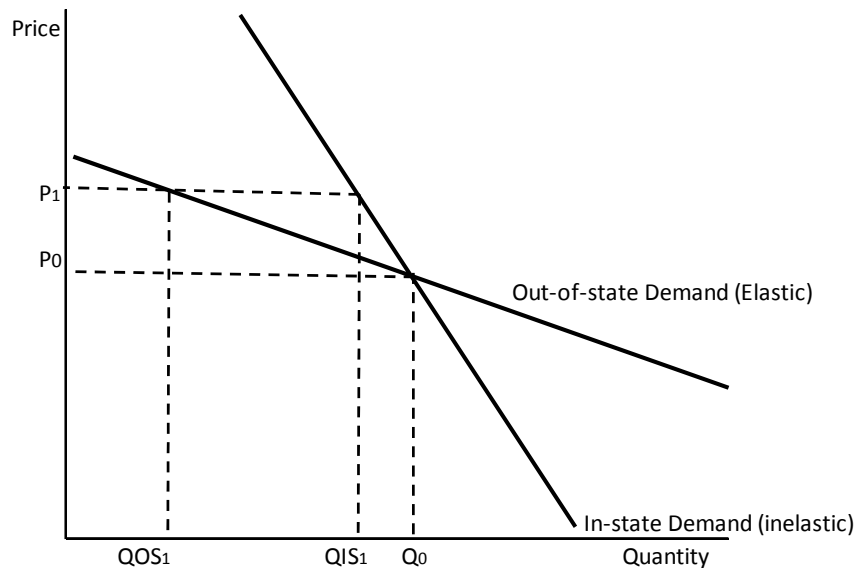
5. In an effort by lobbyist from the snack food industry, the sales tax (assigned as a % of price) associated with snack food is reduced by 10%. The lobbyists cite an interest in increasing snack food consumption. Are the lobbyists correct that a decrease in the sales tax will lead to an increase in consumption? Show why this is or isn't the case.

    Such a move would lower the effective price of gasoline paid by consumers and increase demand. As shown below, the initial sales tax would move the price paid by consumers from P_0 to PD_1. The reduction in taxes by 10% would reduce the effective price paid by the consumers to PD_2 and increase quantity from Q_1 to Q_2
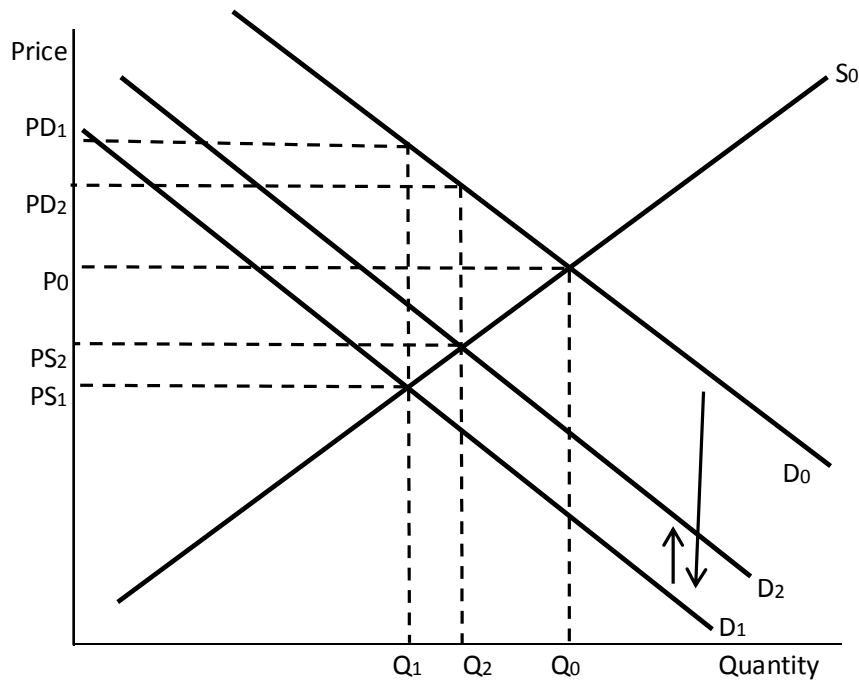
6. The price paid for a commercial during the Super Bowl has increased in price dramatically over the past 5 years. Explain and show (using supply and demand curves) what might have caused this change.

   One possible explanation is that the supply is relatively inelastic (given there is only so much air time for commercials to air and that the audience for the Super Bowl has expanded. Given a larger audience, the demand for commercials increases from D0 to D1, leading to a higher price.
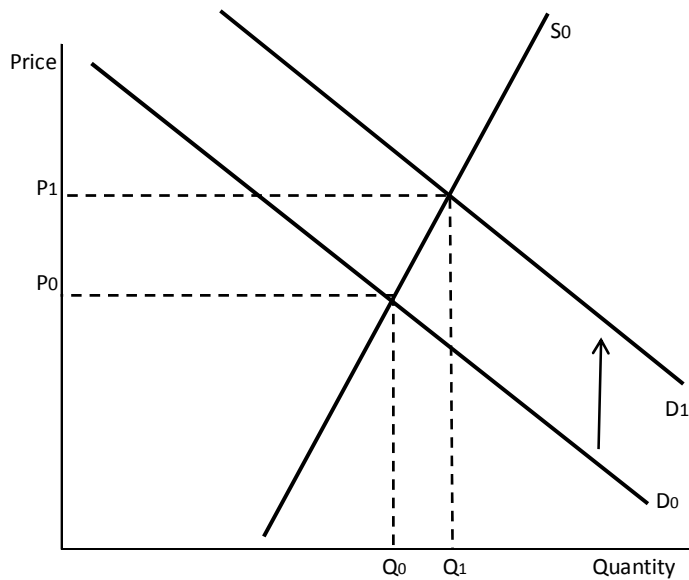
7. Manufacturing jobs have largely migrated from the United States into other countries including China and Mexico. At the same time high-skilled jobs have experienced significant growth in the United States. Many argue that Americans should buy only products that are manufactured in the United States. Would American consumers be better off if we consumed only products manufactured in the United States? Explain.

   The theory of comparative advantage states that when countries focus on what they have a comparative advantage in producing, they can benefit from trade. This is the case when we look at manufacturing versus high-skilled labor. U.S. is likely to have a comparative advantage in high-skilled labor and can benefit from lower priced manufacturing goods as well as more efficient production when trading with China and Mexico. If we consumed only products manufactured in the US (protectionism), then we are likely to experience higher prices which would make consumers worse off.