ECO 401-002, 003
Spring 2013
Test #1

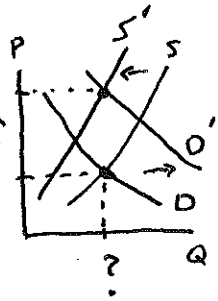
Name: KEY

Questions 1-6: multiple choice, 5 points each, circle correct answer.

1. From the WSJ, 8/25/10: "Cattle prices are soaring toward records, pushing up the cost of beef in grocery stores. The gains are being fueled by rising appetites globally. . . . Nations in Asia and elsewhere are buying more U.S. beef." Based on this information, which of the following would you predict?

A
   a) Fashion designers will react to falling prices for leather and use more leather in shoes, handbags, and coats.
   b) Fast-food restaurants will add more pork products to their menus in response to lower prices for pork.
   c) U.S. consumers will want to purchase more beef to keep American cows from being shipped overseas.
   d) None of the above is likely to happen when beef prices rise.

2. A hard freeze destroys a large portion of the Florida orange crop. Simultaneously, a widely publicized study reports that drinking large quantities of orange juice substantially reduces the risk of both heart disease and cancer. From this we can predict that



A
   a) The equilibrium price of oranges will rise but equilibrium quantity may rise, stay the same, or fall.
   b) The equilibrium price of oranges will fall, but equilibrium quantity may rise, stay the same, or fall.
   c) The equilibrium quantity of oranges will rise, but equilibrium price may rise, stay the same, or fall.
   d) The equilibrium quantity of oranges will fall, but equilibrium price may rise, stay the same, or fall.

3. The demand function for cabbage is given by $Q_d = 15 - 2P$, where Q_d is quantity demanded and P is market price. The supply function is given by $Q_s = 5P - 6$, where Q_s is quantity supplied and P is market price. Equilibrium in the market for cabbage occurs when

D
   a) P = $7 and Q = 7.
   b) P = $5 and Q = 5.
   c) P = $4 and Q = 14
   d) P = $3 and Q = 9.

$Q_D = Q_S$

$15 - 2P = 5P - 6$

$21 = 7P$

$P = 3, \quad Q = 9$

4. After repeated experimentation, your professor determines that his granddaughter Lila is willing to trade three regular M&M's (good X) for two Hershey's kisses (good Y). From this you can conclude that

B
   a) Lila's marginal utility from M&M's is one and a half times as great as her marginal utility from Hershey's kisses.
   b) Lila's marginal utility from Hershey's kisses is one and a half times as great as her marginal utility from M&M's.
   c) Lila could gain from trading (giving up) M&M's in exchange for Hershey's kisses with her little sister Margo, since Margo is willing to trade two M&M's for one Hershey's kiss.
   d) Your professor should not be left unsupervised with his granddaughters.

$$MRS_{x,y} = -\frac{\Delta Y}{\Delta X}\bigg|_{\bar{u}} = \frac{MU_x}{MU_y} = \frac{2}{3}$$

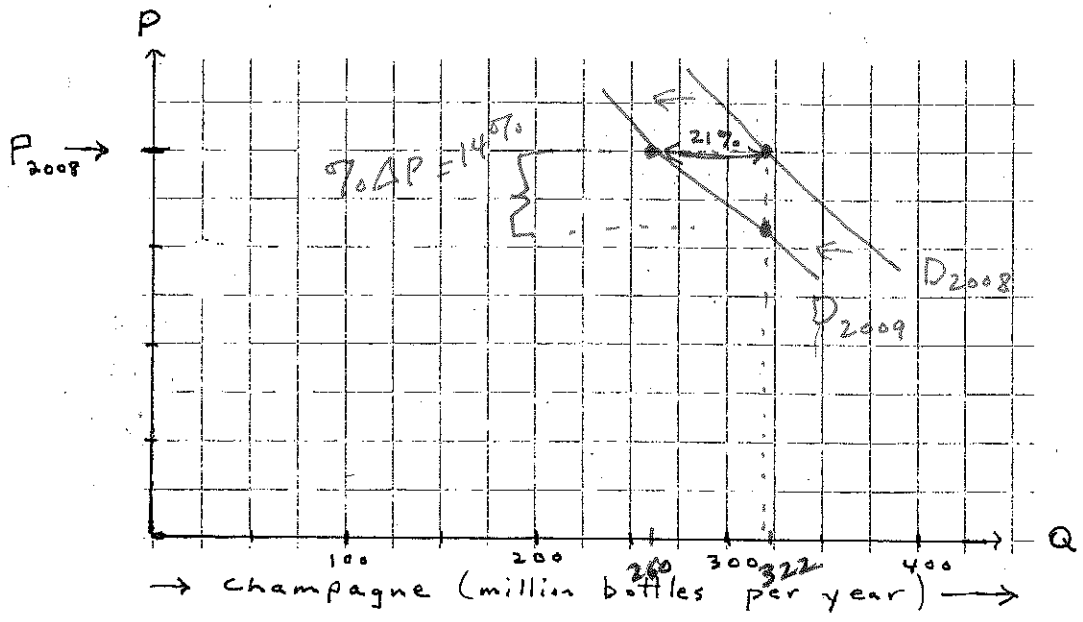
5. Which of the following statements is true about the consumer's demand curve?
   a) The consumer's level of well-being varies along the demand curve.
   b) The prices of other goods are held constant along a demand curve, but the quantities purchased of these other goods can vary.
   c) The demand curve identifies the marginal benefit associated with various levels of consumption of the good.
   d) All of the above three statements are true about demand curves.

D

6. Heroin is physically addictive and hence the demand for it by heroin addicts is very price inelastic. Many heroin addicts finance their consumption of heroin through shoplifting, petty theft, robbery, and other criminal acts. If the U.S. Drug Enforcement Agency takes actions against suppliers of heroin such that the market price of heroin increases, which of the following do you think is most likely to happen?
   a) Heroin suppliers will supply more heroin as a result of the increase in their costs.
   b) Heroin users will commit more crimes to finance their increased expenditures on heroin.
   c) Heroin users will commit fewer crimes since their expenditures on heroin will fall.
   d) Heroin prices will fall as a result of the decrease in demand.

B

7. (10 pts.) From the *WSJ*, 9/3/2009: "As a result of the worldwide recession, global champagne sales are expected to fall from 322 million bottles in 2008 to 260 million bottles this year. Champagne makers like LVMH Moet Hennessy Louis Vuitton SA are contemplating price cuts to soften the blow of the decreased demand for champagne." Their marketing research departments have estimated the own-price elasticity of demand for champagne to be 1.5. If champagne makers cut their prices in 2009, they can keep quantity sold from declining. By what percentage would champagne makers need to reduce their prices in order to keep quantity sold the same in 2009 as it was in 2008? Illustrate what is going on in the diagram below and briefly explain.



$$\%\Delta X = \frac{322 - 260}{\frac{1}{2}(322 + 260)}$$

$$\%\Delta X = \frac{62}{291} = 21\%$$

$$\varepsilon_{x,P_x} = \frac{\%\Delta X}{\%\Delta P_x}$$

$$1.5 = \frac{21}{\%\Delta P_x}$$

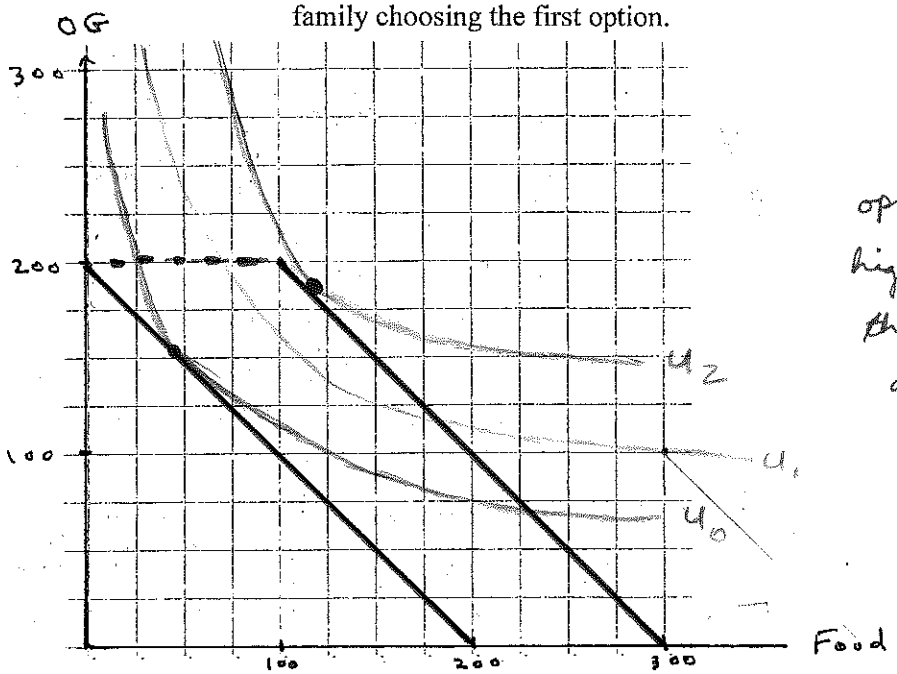
$$\%\Delta P_x = \frac{21\%}{1.5}$$

$$\%\Delta P_x = 14\%$$

If P stays the same, Q will fall by 62 million bottles. If champagne makers cut prices by 14% in 2009, Q will stay at 322 million bottles

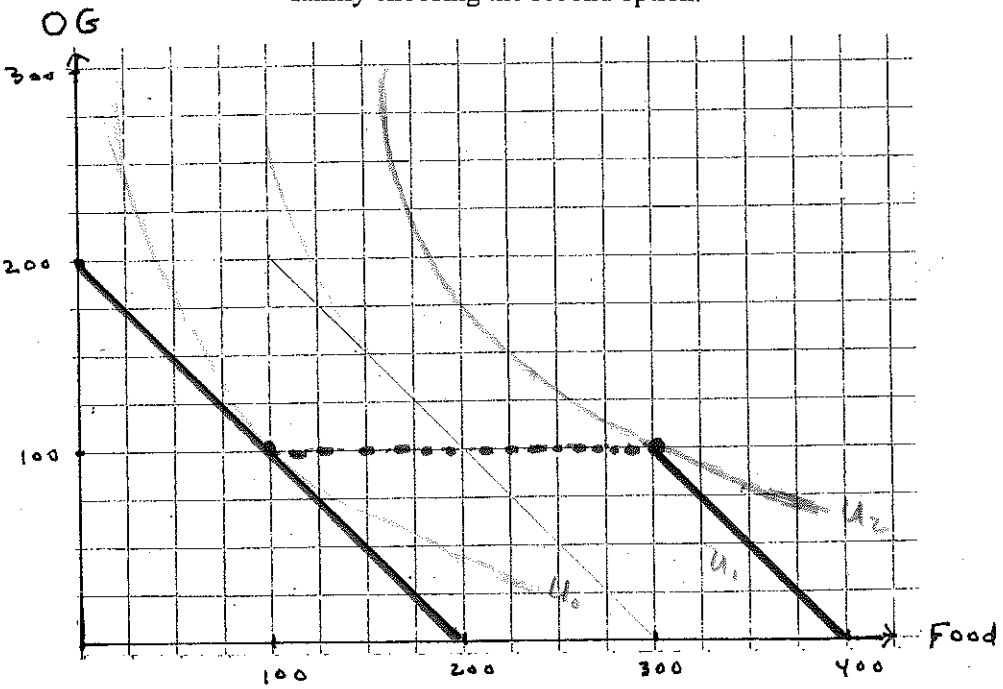
8. (20 pts.) Suppose that the food stamp program is changed so that eligible households are offered two options. Under option #1 the family is simply given $100 worth of food stamps. Under option #2 the family can spend $100 of their cash income and purchase $300 worth of food stamps. Some families choose option #1, while other families choose option #2.

   a) In the diagram below, illustrate the original and the new budget constraint of an eligible family that choose option #1. Assume that the family's cash income is $200, P_{OG} = $1, and P_{food} = $1. Draw indifference curves that are consistent with this family choosing the first option.



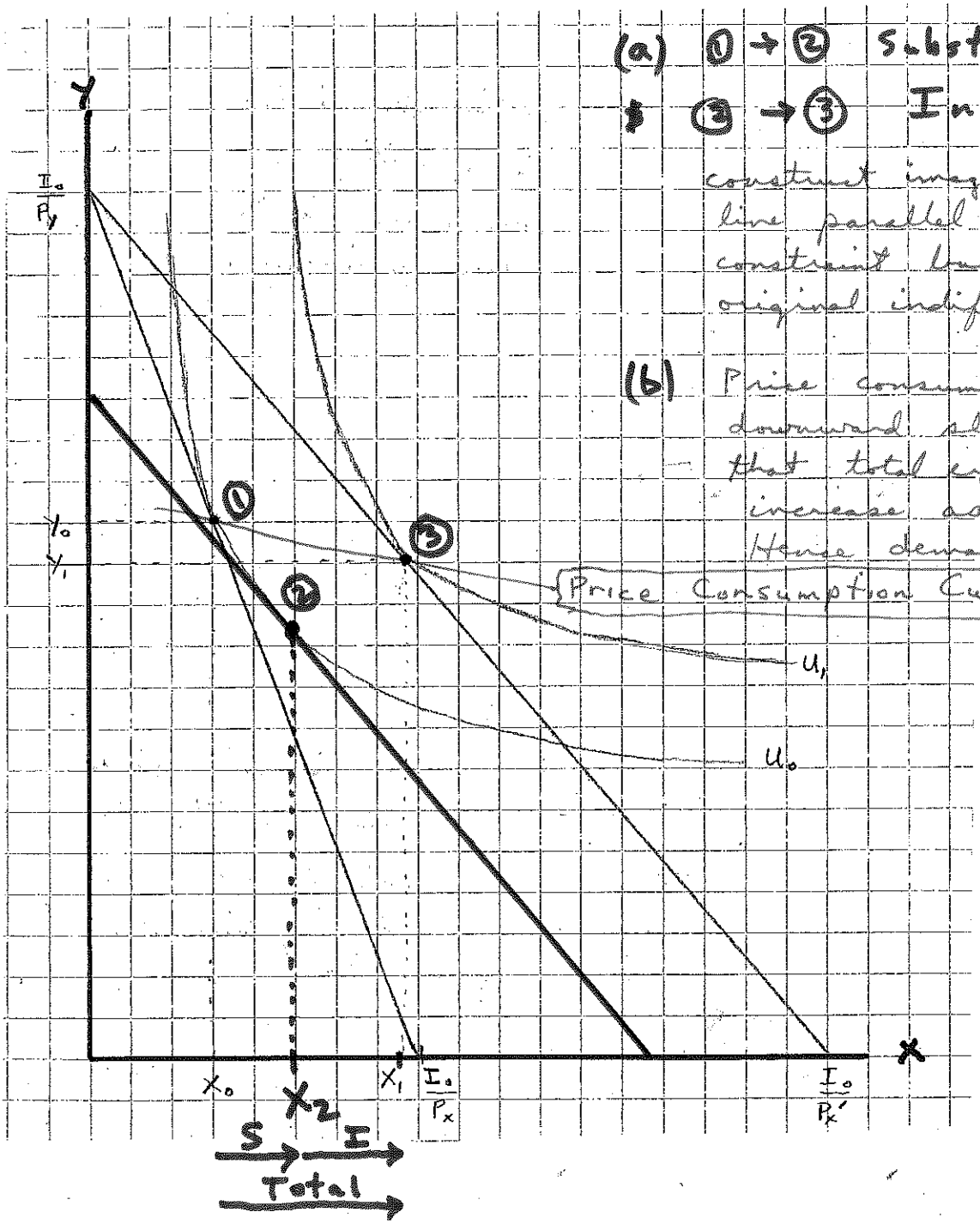
option #1 yields higher utility for this household than does option #2.

   b) In the diagram below, illustrate the original and the new budget constraint of an eligible family that choose option #2. Assume again that the family's cash income is $200, P_{OG} = $1, and P_{food} = $1. Draw indifference curves that are consistent with this family choosing the second option.



option #2 yields higher utility for this family than does option #1.

9. (15 pts.) Janet consumes two goods, X and Y. Her income is I_0. The prices of X and Y are P_x and P_y, respectively. Under these conditions Janet chooses to consume the bundle X_0 and Y_0 and attains a level of utility U_0 as illustrated below. The price of X falls to P_x' and Janet increases her consumption to X_1 and attains a higher level of utility U_1 as shown.
   a) In the diagram below, illustrate and briefly explain how you can separate the total effect of the price change into its substitution effect and income effect components.
   b) Without knowing numerical values for X_0, X_1, P_x, and P_x', can you determine whether Janet's demand for X is elastic or inelastic? Explain.

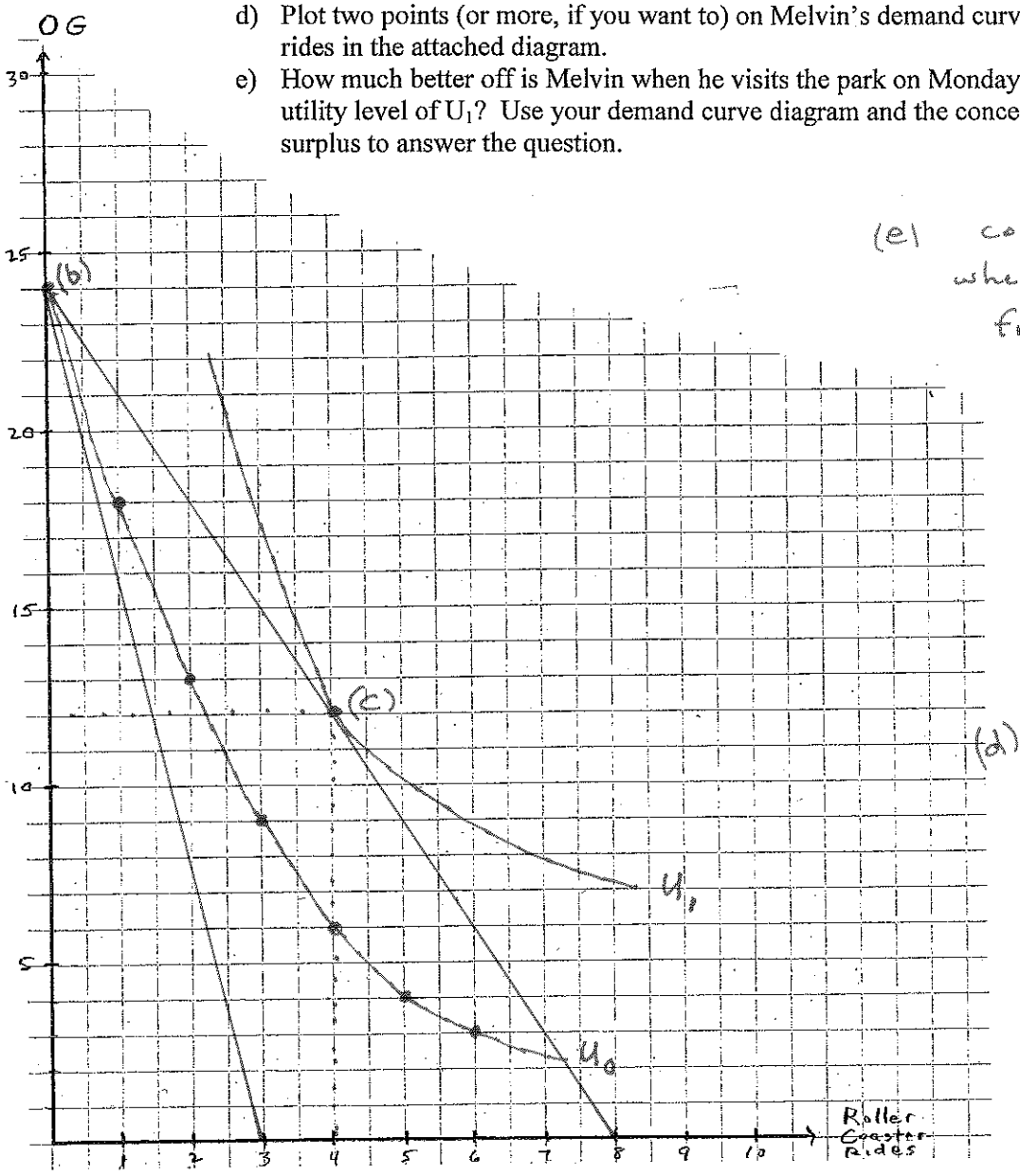


(a) ① → ② Substitution Effect
② → ③ Income Effect
constructed imaginary budget line parallel to new budget constraint but tangent to original indifference curve

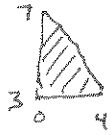
(b) Price consumption curve is downward sloping, indicating that total expenditures on X increase as its price falls. Hence demand for X is elastic.

Price Consumption Curve

10. (25 pts.) Little Melvin loves to go to the amusement park and ride the roller coaster (good X). He also likes to consume other goods (good Y) like cotton candy and arcade games. The price of these other goods is P_{OG} = \$1 per unit. When Melvin's parents give him \$24 to spend at the amusement park, he can thus purchase 24 units of other goods if he doesn't ride the roller coaster. Melvin's preferences for roller coaster rides and other goods are such that he is willing to give up 6 units of other goods in order to ride the roller coaster once. To ride the roller coaster a second time he is willing to give up 5 units of other goods. He is willing to trade 4 units of other goods for a third ride, 3 units of OG for a fourth ride, 2 units of OG for a fifth ride, and 1 unit of OG for a sixth ride.
    a) In the diagram below graph Melvin's indifference curve as described above and label it U_0.
    b) If the price of roller coaster rides is \$8, graph Melvin's budget constraint and show Melvin's optimal consumption bundle. Label it (b).
    c) On Mondays, the amusement park reduces the price of roller coaster rides to \$3, and in response Melvin chooses to ride four times when he visits on a Monday. Draw his Monday budget constraint and sketch indifference curve U_1 that is consistent with Melvin's observed behavior. Label the optimal bundle (c).
    d) Plot two points (or more, if you want to) on Melvin's demand curve for roller coaster rides in the attached diagram.
    e) How much better off is Melvin when he visits the park on Monday and attains a utility level of U_1? Use your demand curve diagram and the concept of consumer's surplus to answer the question.



(e) consumer's surplus when price falls from \$8 to \$3:



: $\frac{1}{2}(4)(4) = \$8$