ECONOMICS 53
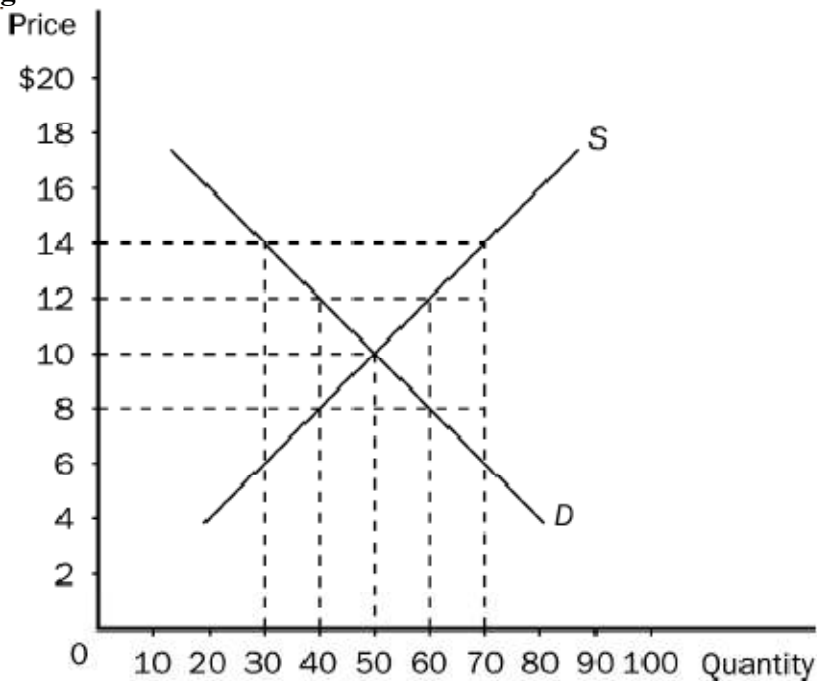## Problem Set 3
Due before lecture on February 11

Part 1: Multiple Choice
*Refer to the information provided in Figure 1 below to answer the questions that follow.*
Figure 1

1. Refer to Figure 1. Which of the following statements is correct?
A) A price ceiling set at $12 would affect the market, but a price ceiling set at $8 would not affect the market.
B) A price floor set at $8 would affect the market, but a price ceiling set at $8 would not affect the market.
C) A price ceiling set at $9 would result in an excess supply.
D) A price floor set at $11 would result in a surplus.

2. Refer to Figure 1. If the government imposes a price floor of $14 in this market, the result would be a
A) surplus of 20.
B) surplus of 40.
C) shortage of 20.
D) shortage of 40.

3. Refer to Figure 1. If the government imposes a price ceiling of $8 in this market, the result would be a
A) surplus of 10.
B) surplus of 20.
C) shortage of 10.
D) shortage of 20.

4. Refer to Figure 1. In which of the following cases would sellers have to develop a non-price rationing mechanism?
a. A price ceiling is set at $8.
b. A price ceiling is set at $12.
c. A price floor is set at $8.
d. A price floor is set at $10.

5. Favored customers are customers who receive special treatment from dealers during periods
of
A) excess demand
B) excess supply.
C) price above equilibrium.
D) price at equilibrium.

6. Suppose the equilibrium price for apartments is $500 per month and the government imposes rent control of $250 per month. Which of the following is **unlikely** to occur as a result of the rent controls?
A) There will be a shortage of housing
B) Landlords may be offered bribes to rent apartments
C) The quality of apartments will improve
D) There may be long lines of buyers waiting for apartments

7. Producer surplus is the area
A) above the supply curve and below the price
B) below the supply curve and above the price
C) above the demand curve and below the price
D) below the demand curve and above the supply curve

Figure 2
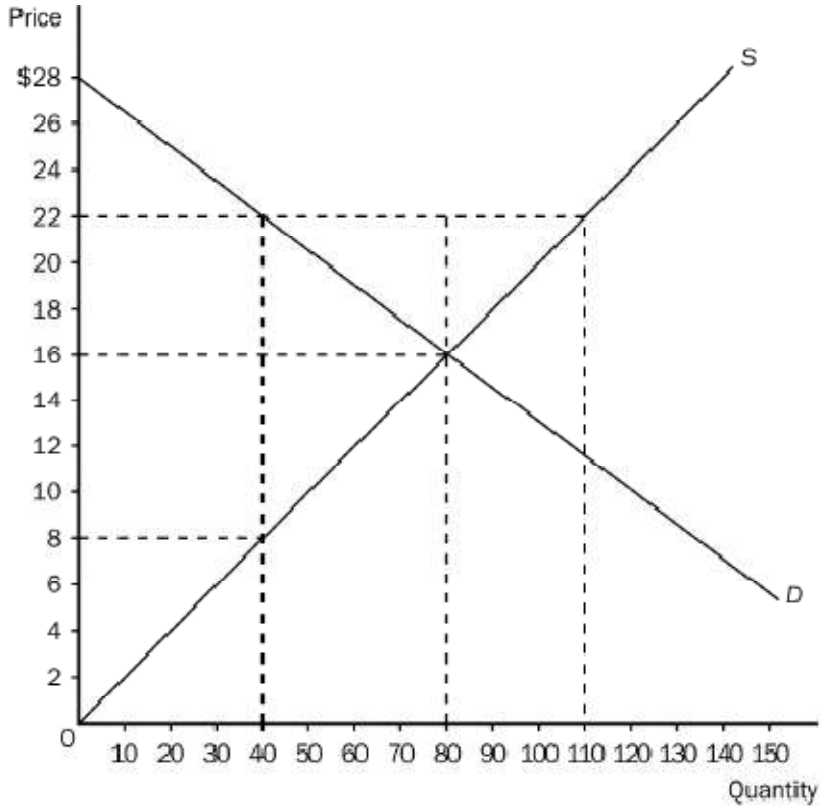
8. Refer to Figure 2. At the equilibrium price, consumer surplus is
A) $480.
B) $640.
C) $1,120.
D) $1,280.

9. Refer to Figure 2. At the equilibrium price, producer surplus is
A) $480.
B) $640.
C) $1,120.
D) $1,280

10. Refer to Figure 2. At the equilibrium price, total surplus is
A) $480.
B) $640.
C) $1,120.
D) $1,280.

11. We can say that the allocation of resources is efficient if
A) producer surplus is maximized.
B) consumer surplus is maximized.
C) total surplus is maximized.
D) sellers' costs are minimized.

12. The price elasticity of demand measures
A) buyers' responsiveness to a change in the price of a good.
B) the extent to which demand increases as additional buyers enter the market.
C) how much more of a good consumers will demand when incomes rise.
D) the movement along a supply curve when there is a change in demand.

13. Demand is said to be elastic if
A) the price of the good responds substantially to changes in demand.
B) demand shifts substantially when income or the expected future price of the good changes.
C) buyers do not respond much to changes in the price of the good.
D) buyers respond substantially to changes in the price of the good.

14. When the price of bubble gum is $0.50, the quantity demanded is 400 packs per day. When the price falls to $0.40, the quantity demanded increases to 600. Given this information and using the midpoint method, we know that the demand for bubble gum is
A) inelastic.
B) elastic.
C) unit elastic.
D) perfectly inelastic.

15. Which of the following is *not* a determinant of the price elasticity of demand for a good?
A) the time horizon
B) the steepness or flatness of the supply curve for the good
C) the definition of the market for the good
D) the availability of substitutes for the good

16. If the price elasticity of demand for a good is -1.65, then a 3 percent decrease in price results in a
A) 0.55 percent increase in the quantity demanded.
B) 1.82 percent increase in the quantity demanded.
C) 4.95 percent increase in the quantity demanded.
D) 5.55 percent increase in the quantity demanded

17. As we move downward and to the right along a linear, downward-sloping demand curve,
A)   slope and elasticity both remain constant.
B)   slope changes but elasticity remains constant.
C)   slope and elasticity both change.
D)   slope remains constant but elasticity changes.

18. Last year, Sheila bought 6 pairs of shoes when her income was $40,000. This year, her income is $52,000 and she purchased 7 pairs of shoes. Holding other factors constant and using the midpoint method, it follows that Sheila's income elasticity of demand is about
A) 0.59 and Sheila regards shoes as an inferior good.
B) 0.59 and Sheila regards shoes as a normal good.
C) 1.7 and Sheila regards shoes as an inferior good.
D) 1.7 and Sheila regards shoes as a normal good.

19. If two goods are substitutes, their cross-price elasticity will be
A) positive.
B) negative.
C) zero.
D) equal to the difference between the income elasticities of demand for the two goods

20. Suppose that an increase in the price of carrots from $1.30 to $1.80 per pound increases the quantity of carrots that carrot farmers produce from 1.2 million pounds to 1.6 million pounds. Using the midpoint method, what is the approximate value of the price elasticity of supply?
A) -1.04
B) 0.67
C) 0.89
D) 1.13

Figure 3
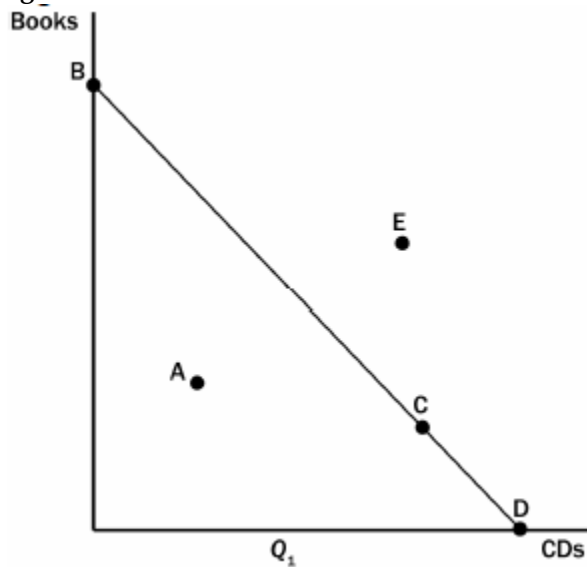
21. Refer to Figure 3. Which point in the figure showing a consumer's budget constraint represents the consumer'sincome divided by the price of a CD?
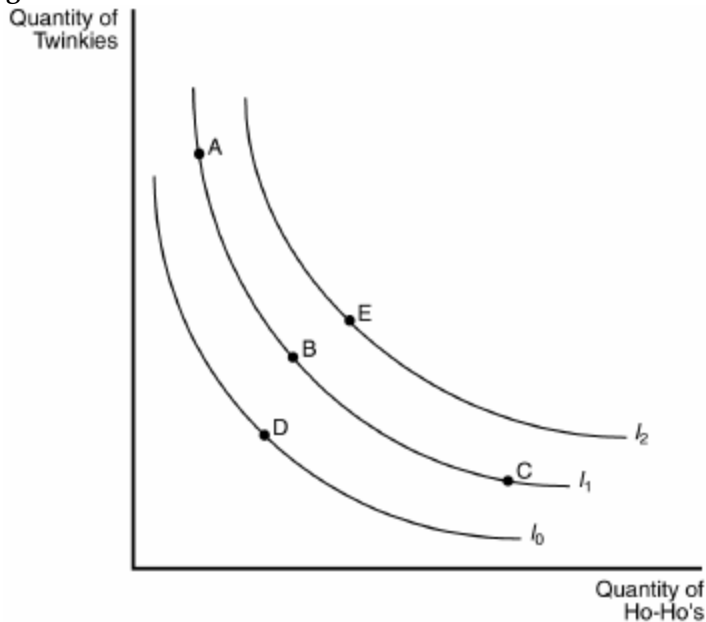A) Point A
B) Point C
C) Point D
D)Point E

22. Refer to Figure 3. A consumer that chooses to spend all of her income could be at which point(s) on the budget constraint?
A) A
B) E
C) B, C, or D
D) A, B, C, or D

23. Refer to Figure 3. All of the points identified in the figure represent possible consumption options with the exception of
A) A
B) E
C) A and E
D) None. All points are possible consumption options.

24. An increase in income will cause a consumer's budget constraint to
A) shift outward, parallel to its initial position.
B) shift inward, parallel to its initial position.
C) pivot around the "Y" axis.
D) pivot around the "X" axis.

25. Marginal utility is the _____ satisfaction gained by consuming _____ of a good.
A) total; all units
B) total; one more unit
C) additional; all units
D) additional; one more unit

26. Richard is consuming X and Y so that he is spending his entire income and $MU_x/P_x = 6$ and $MU_y/P_y = 10$. To maximize utility, he should
A) continue to consume the same amount of X and Y since he is already maximizing utility.
B) consume less of both X and Y.
C) consume more X and less Y.
D) consume less X and more Y.

27. The law of diminishing marginal utility refers to
A) a consumer's decrease in total satisfaction as she consumes more units of a good.
B) a consumer's decrease in additional satisfaction as she consumes more and more units of a good.
C) the idea that total utility is negative.
D) the idea that marginal utility is negative.

28. If two bundles of goods give a consumer the same satisfaction, the consumer must be
A) on her budget constraint.
B) in a position of equilibrium.
C) indifferent between the bundles.
D) Both A and C are correct.

29. The slope of an indifference curve is
A) the rate of change of consumer's preferences.
B) the marginal rate of preference.
C) the marginal rate of substitution.
D)always equal to the slope of the budget constraint.

Figure 4

30. Refer to Figure 4. Which of the following statements is correct?
A) Point A is preferred equally to point E.
B) Point A is preferred equally to point C.
C) The bundle associated with point B contains more Ho-Ho's than that associated with point C.
D)The bundles along indifference curve I1 are preferred to those along indifference curve I2.

31. Refer to Figure 4. Which of the following statements is true?
A) If a consumer moves from point C to point A, her loss of Ho-Ho's cannot be compensated for by an increase in Twinkies.
B) Point E is preferred to all other points identified in the figure.
C) Point C is preferred to point E.
D) Point B is preferred to point E.

32. Refer to Figure 4. Which of the following statements is *not* true for a consumer who moves from point B to point C?
A) At point C the consumer would be willing to give up a larger number of Ho-Hos in exchange for a Twinkie than at point B.
B) The marginal rate of substitution at points C and B are the same since the points lie on the same indifference curve.
C) The consumer is willing to sacrifice Twinkies to obtain Ho-Ho's.
D) The consumer receives the same level of satisfaction at points B and C.

33. For normal goods, the substitution and income effects of a price decrease will
A) both decrease the quantity of the good demanded.
B) both increase the quantity of the good demanded.
C) the substitution effect will increase the quantity of the good demanded while the income effect will decrease the quantity of the good demanded.
D) the substitution effect will decrease the quantity of the good demanded while the income effect will increase the quantity of the good demanded.

34. If the substitution effect of a wage change outweighs the income effect of a wage change, the labor-supply curve is
A) upward sloping.
B) horizontal.
C) vertical.
D) backward bending.

35. The wage rate can be seen as a measure of the opportunity cost of
A) work
B) saving
C) leisure
D) future consumption

Part II: Short-Answers
Question 1 Consumer and Producer Surplus
Suppose the market for exotic yak milk is given by the following supply and demand equations:

$Q^d = 300 - 20P$
$Q^s = 20P - 100$

(a) Graph the supply and demand curves for yak milk. What is the equilibrium price and quantity?
(b) Calculate the consumer surplus at the equilibrium price
(c) Calculate the producer surplus at the equilibrium price
(d) Calculate the total surplus at the equilibrium price

Suppose that the government steps in and imposes a price ceiling of $8 a gallon.

(e) At this price ceiling will we have a shortage or a surplus of yak milk? What is the amount of the shortage or surplus?
(f) Calculate the consumer surplus under the price ceiling. (Hint: Consumers can only purchase what firms supply).
(g) Calculate the producer surplus under the price ceiling.
(h) Calculate the deadweight loss that results from the price ceiling

Question 2 Elasticity and Total Revenue
Your cousin owns a small movie theater in Modesto. She currently charges $5 per ticket for everyone who comes to her movies. Using the knowledge you gained in your Econ 53 course, you tell your cousin that there may be a way to increase her total revenue. Given the demand curves for adults and children respectively shown below, answer the following questions.
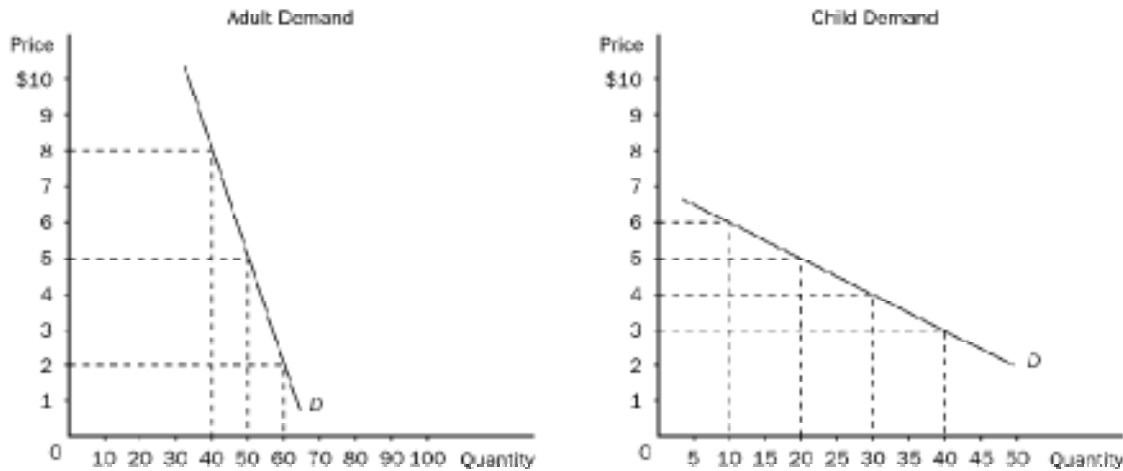
(a) What is your cousin's current total revenue from adult tickets? What is her current total revenue from children tickets? What is the total revenue from all sales?

(b) Calculate the price elasticity of demand between the prices of $5 and $2 in the adult market using the midpoint method. Based on your answer does the adult market have elastic or inelastic demand?

(c) Calculate the price elasticity of demand between the prices of $5 and $3 in the children's market using the midpoint method. Based on your answer does the children market have elastic or inelastic demand?

(d) Given this information and what you know about microeconomics, you recommend to your cousin that she increase the price of the adult ticket to $8 each and lower the price of a child's ticket to $3. If your cousin takes your advice by how much will her total revenue increase?

Question 3 Elasticity Application: iPods and iTunes
You have been hired by Steve Jobs to predict the effects of increasing the price of iTuenes songs by 10%, from $0.99 to $1.09. You are interested in the effects of the price hike on (1) the number of songs downloaded legally from iTunes, the number of songs downloaded legally from other online music stores, the number of iPod players sold, and the number of CDs sold in stores. Given the hypothetical elasticites in the following table, fill in the blanks.

Product	Price Elasticity of Cross-Price Elasticity	Predicted Change in Quantity Demanded
iTunes songs	-1.50	
Songs from other online stores	2.00	
iPod players	-0.70	
CDs in stores	1.80	

Question 4 Elasticity Application: Washington D.C. Paradox
Over twenty years ago the city of Washington D.C. was facing a budgetary shortfall. In a plan to increase tax revenue the mayor and city council agreed to raise the excise tax on gasoline. Typically for goods like gasoline which are price inelastic this should have led to an increase in tax revenue. However, just the opposite happened – tax revenue plummeted! What could explain this seemingly paradoxical result?

Question 5 Gas Prices and BART
Consider the effect of higher gasoline prices on public transit ridership. Suppose the average price of riding BART (Bay Area Rapid Transit) is $4.00 per ride and at that average price, ridership is 350,000 people per day. Suppose the cross-price elasticity of demand of BART rides with respect to gasoline is 0.667. Suppose the price of a gallon of gasoline increases from $3.00 a gallon to $3.30 a gallon. What effect will the increase in gas price have on BART ridership? What can you say about the relationship between BART ridership and gas prices?

Question 6 Price Elasticity of Supply
When the price of paper increases from $100 to $104 per ton, the quantity supplied by the paper company Dunder-Mifflin increases from 200 to 220 tons per day. Using the midpoint method calculate the price elasticity of supply for Dunder-Mifflin.

Question 7 Consumer Choice

Your monthly budget for entertainment is $20, and the two entertainment goods you purchase are video game rentals and movie rentals. The price of a video game rental is $5 each while the price of a movie rental is $4 each.

   (a) Draw your budget constraint. Plot video games on the vertical (y-axis) and movie rentals on the x-axis.
   (b) Identify your opportunity set (choice set) in your answer from Part a.
   (c) Suppose the price of a movie rental were to increase from $4 to $5. Sketch your new budget constraint. What happens to your opportunity set compared to the opportunity set you identified in Part (b)?
   (d) Return to the original prices of video game rentals and movie rentals. Suppose that your income rises from $20 to $40. Sketch your new budget constraint. What happens to your opportunity set compared to the opportunity set you identified in Part (b).

Question 8 Consumer Choice Continued

Your monthly budget for entertainment is $20, and the two entertainment goods you purchase are video game rentals and movie rentals. The price of a video game rental is $5 each while the price of a movie rental is $4 each.

(a) Complete the following table for Movie Rentals

Quantity of Movie Rentals per Month	Total Utility	Marginal Utility	Marginal Utility per Dollar (MU_x/P_x)
1	50		
2	94		
3	134		
4		36	
5		32	
6		24	

(b) Complete the following table for Video Game Rentals

Quantity of Video Game Rentals per Month	Total Utility	Marginal Utility	Marginal Utility per Dollar (MU_x/P_x)
1		52	
2		41	
3		36	
4	154		
5	174		
6	185		

(c) What combination of video game rentals and movie rentals will maximize your utility given your budget constraint? Explain your reasoning.

Question 9 Consumer Choice (Using Algebra)

Jane lives in a dormitory that offers soft drinks and chips for sale in vending machines. Her marginal utility for soft drinks (Good X) is equal to 3Y and her marginal utility of chips (Good Y) is equal to 3X.

$MU_X = 3Y$

$MU_Y = 3X$

Soft drinks are priced at $0.50 each, chips $0.25 per bag.

If Jane has $5.00 per week to spend on chips and soft drinks, how many of each should she purchase per week?

Question 10 Kinked Budget Constraints

Graph the budget constraint for $P_X = 2$, $P_Y = 3$, and $I = 1500$ with the additional condition that X is free for the first 250 units. Measure units of X along the horizontal axis and units of Y along the vertical axis.