

Economics 2010 (Morey section), Fall 2011

Second Midterm: Version 1

Name: _____ Date: _____

I have added comments to some of the questions. I commented on questions that people found difficult and others simply because I wanted to comment on them.

Note that we gave everyone full credit for the cruise question about variable costs. It was not a great question.

I did not add comments to version 2. Takers of version 2 need to look through the comments on this version.

Some people do not adequately understand negative numbers and what they mean.

Surprisingly, at least to me, some people found the elasticity questions difficult. I thought most of them would be shoe-ins. Maybe the difficulty is due to my last point.

There was an issue with question 19 that I only thought about after the exams were graded. Given the problem with the question (explained below) we will add one point, out of 45, to everyone's test score. This grade change applies to both versions of the exam.

1. Which statement best describes how the competitive firm chooses the input combination it will use to produce, in the long run, its chosen level of output.
 - A) It is determined by the isoquant map
 - B) It is determined by the input prices
 - C) It is determined by the state of technical knowledge for producing its output and the constraints imposed on the firm by the market.
 - D) It is determined by its chosen level of output

2. Billy the bulldog has a \$30 coupon for Dogs'R'Us, a store that sells only two goods: puppy chow (\$5 per bag) and chew toys that look like economics professors (\$3 per toy). Billy can only use the coupon once and he must use his organic shopping bag to drag home whatever he buys. The bag can hold an unlimited number of chew toys, but at most three bags of chow. Billy will starve unless he buys at least one bag of chow. Which of the following bundles is in his choice set?
 - A) 2 bag of food; 6 chew toys.
 - B) 4 bags of food; 2 chew toys
 - C) 0 bags of food; 8 chew toys
 - D) 3 bags of food; 6 chew toys

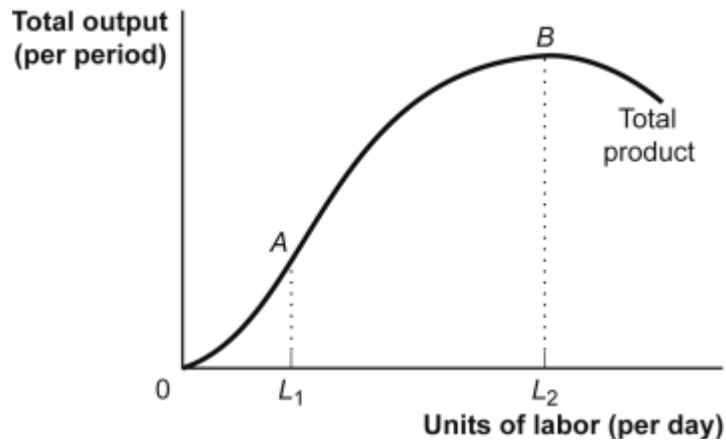
3. Consider two different indifference curves, the latter for a higher level of utility than the former. While not likely, it is possible that these two indifference curves intersect.
 - A) True
 - B) False

4. In the theory of the firm, we use "isoquants". Breaking down the term we have "quant" as in "quantity," and "iso" as in "one," meaning every point on an isoquant corresponds to the same quantity. The analogous concept in regards to consumer theory is_____.
 - A) Preferences
 - B) Utility
 - C) A budget line
 - D) An Indifference curves

5. Consider two commodities A and B that are both bads, with A on the vertical axis and B on the horizontal axis. Higher indifference curves (curves further up and right) represent
 - A) the same amount of utility as lower curves.
 - B) less utility than do lower indifference curves.
 - C) either more or less utility than lower curves.
 - D) more utility than do lower indifference curves

Use the following to answer question 6:

Figure: Total Product



6. (Figure: Total Product) Between points A and B the marginal product of labor is:
 - A) infinite.
 - B) increasing.
 - C) zero.
 - D) **falling.**

Between points A and B total product is increasing but marginal product is falling.

7. Consider the statement, "The slope of an indifference curve (budget line) for goods A and B indicates the rate at which the individual (the market) substitutes good A for Good B." This statement is
- A) false
 - B) not enough information to determine whether it is true or false.
 - C) true

8. Consider two commodities that are complements: peanut butter and jelly. The jelly-price elasticity of demand for peanut butter is likely positive.
- A) True
 - B) **False**

The elasticity being asked about is the percentage change in the demand for peanut butter divided by the percentage change in the price of jelly. Since they are compliments (the utility you get from consumption of one of them is higher the more of the other you are consuming), this elasticity will be negative. That is, as the price of jelly goes up the demand for peanut butter will not down, so the elasticity is negative and the answer is false.

9. Which of the following best illustrates an "income effect" of a price increase?
- A) The price of corn chips increases, so Michelle buys potato chips, a substitute for corn chips
 - B) The tuition at the public university increases, so Michelle attends a community college, a substitute for a public university
 - C) Michelle's apartment rent increases, so she cancels her subscription to a monthly magazine.
 - D) The price of bacon increases, so Michelle buys more sausage, a substitute for bacon.

10. Zoe's Bakery operates in a perfectly competitive industry. Suppose that when the market price is \$5, the profit-maximizing output level of pastries is 150 units, with average total cost of \$4, and average variable cost of \$3. From this we know Zoe's marginal cost is _____, and her short-run profits are _____.
- A) \$1; \$150
 - B) **\$5; \$150**
 - C) \$1; \$300
 - D) \$5; \$300

At the profit maximizing output level, we know that price equals marginal cost. So if price is \$5, marginal cost must be \$5. Total revenue is 150 multiplied by 5, which is \$750, and total cost is 150 multiplied by 4, which \$600, so profits are \$150

11. Let d denote Diet Cokes and c chocolate bars. At my current consumption level my $MRS_{dc}=3$. So, my wtp for an additional chocolate bar is 1/3 of a Diet Coke.
- A) **True**
 - B) False

The MRS_{dc} is how chocolate consumption must decline if the guy drinks another Diet Coke and one wants to hold his utility constant. Since it is three, it means he will give up 3 chocolate bars to drink another Diet Coke. Or said the other way, he will give up $1/3$ of a Diet Coke to get another chocolate bar.

12. At my current consumption levels, My wtp for a Diet Coke in terms of chocolate bars is 3. Let d denote diet Cokes and c denote chocolate bars. Therefore my $MRS_{dc}=3$ and the slope of my indifference curve at my current level of consumption is -3 , with chocolate on the vertical axis and Diet Cokes on the horizontal axis.

- A) True
- B) False

Simply, three different ways of saying the same thing.

13. Chuck spends all his income on two goods: tacos and milkshakes. His income is \$100, the price of tacos is \$10, and the price of milkshakes is \$2. Put tacos on the horizontal axis and milkshakes on the vertical axis. The opportunity cost of one taco equals _____ units of milkshakes.

- A) 10
- B) 5
- C) $1/5$
- D) 2

14. The slope of _____ shows the rate at which two goods can be exchanged _____ the consumer's _____.

- A) an indifference curve; without affecting; utility level.
- B) an indifference curve, without affecting, level of expenditures.
- C) a budget line, without affecting, utility level.

15. The curve that shows the additional cost of each additional unit of output is called the:

- A) marginal cost curve.
- B) marginal product curve.
- C) average cost curve.
- D) total cost curve.

16. Consider two commodities that are substitutes: skiing at Vail and skiing at Aspen. The Vail-price elasticity of demand for trips to Aspen is likely positive.

- A) **True**
- B) False

The question is asking about the percentage change in the demand for trips to Aspen divided by the percentage change in price of skiing Vail. If they are substitutes this elasticity is positive.

17. Karen consumes gasoline and other goods. A new excise tax on gasoline raises gas prices. However, the government pays Karen an income subsidy that is just enough for her to stay on her original (pre-tax) indifference curve. Her new optimal consumption bundle will have:
- A) This question can't be answered, since some essential information (such as Karen's income, the pre- and post-tax prices of gas, etc.) is missing.
 - B) less of other goods and more gas.
 - C) the same amount of both goods as before.
 - D) less gas and more of other goods.
18. Assume China and the U.S. currently have the same levels of pollution, but the U.S. is much richer in terms of goods. Which statement is more likely to be correct?
- A) Willingness-to-pay for pollution reduction is higher in China
 - B) The marginal-rate-of-substitution of pollution reduction for goods in the U.S. is greater than the marginal-rate-of-substitution of pollution reduction for goods in China
 - C) The marginal-rate-of-substitution of pollution reduction for goods in China is greater than the marginal-rate-of-substitution of pollution reduction for goods in the U.S.
19. If it produces, a perfectly competitive firm will maximize profits at the output level where
- A) marginal revenue equals price.
 - B) price equals average total cost.
 - C) price exceeds marginal cost.
 - D) **marginal revenue equals marginal cost.**

At the point where marginal revenue (price) equals marginal cost. For a competitive firm, marginal revenue is equal to price at every possible output level, so they are equal at the output level where profits are maximized. So, taken literally, A is true. **When this question was graded we only counted it correct if you answered D. We will, now, add one point (out of 45) to each score. I should have been more careful with this question.**

20. In the Fred lectures, If Fred is being paid \$x a mile to ski, and currently it is costing her more than \$x to crank out her last mile, to increase her revenues she needs to ski more.
- A) **True**
 - B) False

The question is asking about her revenue not her profits. To get paid more she needs to ski more. Carefully read each question.

21. Utility is the:
- A) satisfaction consumers derive from their consumption of goods and services.
 - B) difference between a firm's total revenue and its total economic cost.
 - C) lowest price that buyers are willing to pay for a given quantity of a good.
 - D) good not adequately provided by a free market and usually provided by the government.

22. Jim is a stalwart Republican; he works a steady job, has a wife and two kids, and lives in the suburbs. He dislikes Obamacare. Which of the following statements is definitely not correct?
- A) For Jim, every state-of-the-world with Obamacare is preferred to every state without Obamacare.
 - B) Jim's wtp to eliminate Obamacare is positive but less than his income.
 - C) Jim's wta Obamacare is positive and maybe greater than his income.
23. Consider the probability of being infected with AIDs, and the frequency one has unprotected sex with a stranger. While you would never have unprotected sex with a stranger, you have a friend who told you he is going to increase his frequency of unprotected stranger-sex by 10%, and you are worried he might contract AIDs. Under which of the following four scenarios will you worry the least about him contracting AIDs
- A) **The percentage change in the probability of him contracting AIDs divided by the percentage change in the frequency of his unprotected stranger-sex is a number less than negative one.**
 - B) The percentage change in the probability of him contracting AIDs divided by the percentage change in the frequency of his unprotected stranger-sex is between zero and negative one.
 - C) The percentage change in the probability of him contracting AIDS divided by the percentage change in the frequency of his unprotected stranger-sex is positive number between zero and one.
 - D) The percentage change in the probability of him contracting AIDs divided by the percentage change in the frequency of his unprotected stranger-sex is a number greater than one.

I asked this question to see if you really understood what elasticity means.

You will worry the least about your friend getting AIDS if having unprotected sex **decreases** the probability of contracting AIDS. That is, you worry less if the elasticity is negative rather than positive. So, if the elasticity were C or D you would worry more than if it was A or B, so this eliminates C and D as possible answers (the two alternatives with positive elasticities). If the elasticity is as described in A or B, unprotected sex helps to protect you against contracting AIDS.

So the correct answer is either A or B. The answer is A because in case B a one percent increases in the frequency of unprotected sex decreases the probability of contracting AIDS, but by less than one percent, whereas in case A, a one-percent increase in the frequency of unprotected sex decreases the probability of contracting AIDS by more than one percent.

Note that -2, for example, is a negative number less than negative 1

And -.5, for example, is a negative number between zero and -1.

I suspect that some of you do not know what less than (or more than) means when the number is

negative.

24. Assume the demand curve for oil is downward sloping. OPEC lowers the price of oil and this leads to an increase in OPEC's revenues from the sale of its oil. The price elasticity of demand for oil is ___ and ___ .
- A) negative, greater than -1
 - B) **negative, less than -1**
 - C) Positive
 - D) negative, greater than

If the demand curve is downward sloping (higher price implies lower demand) the price elasticity of demand must be negative, so C cannot be correct. If lowering the price increases total revenue, then demand must be going up in percentage terms more than price is going down in percentage terms, meaning the price elasticity of demand must be elastic (negative and less than -1).

A price elasticity of demand that is negative and less than -1 (elastic) implies that a one percent price increase (decrease) will lead to a more than one percent quantity decrease (increase) causing total revenue to decrease (increase) if price is increased (decreased).

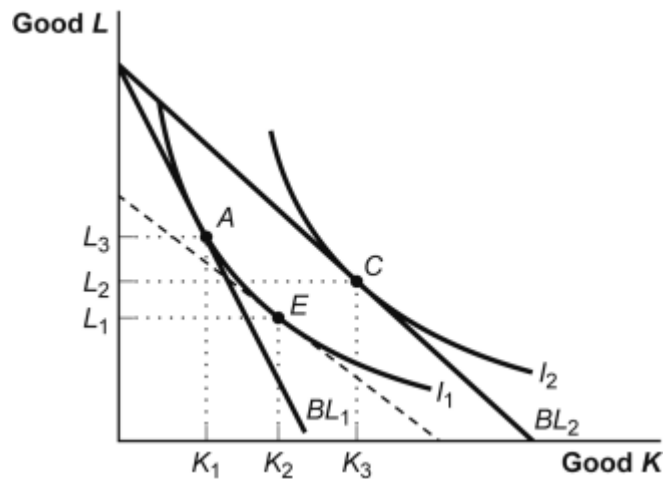
Note that a number cannot be negative and greater than one.

25. In Xiodo China, a small rural community, China's one-child policy combined with a son preference has shifted the situation from 100 potential grooms and 100 potential brides to 100 potential grooms and 80 potential brides. This policy will increase, for potential grooms, the cost of getting married, and decrease the number of marriages (assuming Xiodo does not import potential brides or export potential grooms). This price increase and quantity decrease is caused by right-ward shift in the demand curve for brides.
- A) True
 - B) **False**

The number of potential grooms stays the same, so the demand curve for brides (they are demanded by potential grooms) does not shift. The policy shifts to the left the supply curve of brides (there are fewer potential brides). Price goes up and number of marriages goes down.

Use the following to answer question 26:

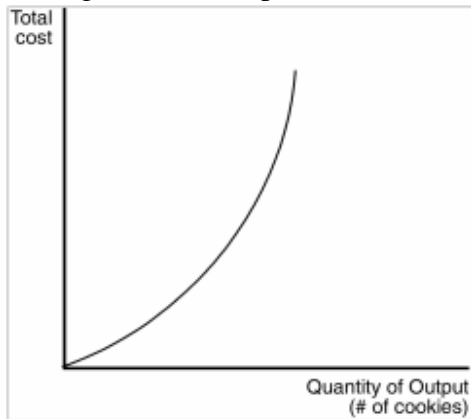
Figure: Income and Substitution Effects



26. (Figure: Income and Substitution Effects) The consumer is originally consuming his or her optimal consumption bundle at point A in the figure when the price of Good K falls. The dashed line tangent to I_1 shows a hypothetical budget line reflecting:
- A) the income and substitution effects.
 - B) the new relative prices of K in terms of L and a change in income to allow the consumer to reach an indifference curve higher than I_1 .
 - C) the original income, original price of L, and the new price of K.
 - D) the new relative prices of K in terms of L and a change in income to keep the consumer on the original indifference curve.
27. In state-of-the-world B everyone has more market goods than in state-of-the-world A, so B is necessarily preferred by everyone.
- A) True
 - B) False

Note the word “necessarily.” We consume market goods and consume/experience non-market commodities (friends, the weather, pollution, Obama as President, the war in wherever, you significant other, etc.). So, no; states-of-the-world with more market goods are not always preferred to states with less market goods. A correct statement would be, “Ceteris paribus (all else constant), states with more of at least some market goods and not less of the other market goods preferred.”

28. The figure below depicts a total cost function for a firm that produces cookies.



Which of the statements below is most consistent with the shape of this total cost curve?

- A) Each additional cookie costs the same to produce.
 - B) The cost of producing each additional cookie is always declining.
 - C) Producing an additional cookie is always more costly than producing the previous cookie.
 - D) The cost of producing each additional cookie eventually declines.
29. Assume a linear downward sloping demand function. Suppose at a price of \$50 and a quantity of 1000, the price elasticity of demand is minus 1. Then
- A) a decrease in price from \$51 to \$49 will leave total revenue unchanged.
 - B) the maximum value total revenue is \$50,000.
 - C) an increase in price from \$40 to \$42 will increase total revenue.
 - D) **All of the above are correct.**

At that price where the price elasticity of demand is -1, changing the price by a small amount will not affect total revenue, so A is correct. Total revenue is maximized when the price is set at the point where the price elasticity of demand is negative one, so B is correct (50000 equals 50 multiplied by 1000). \$40 is less than \$50, so at \$40 the price elasticity is inelastic (between zero and negative one) to raising the price from \$40 to \$42 will increase total revenue. They are all correct.

30. Fabian wants to get exactly 70% on the final. Fabian produces the exam score using two inputs: hours of study time and milligrams of a drug that helps him to concentrate. Which of the following statements is both necessarily correct and most informative
- A) His isoquant for producing a 70% result identifies all those combinations of study hours and milligrams of drugs that will just get him a score of 70%.
 - B) His isoquant for producing a 70% result is the rate at which he can substitute study hours for milligrams of drugs in the production of the 70% score
 - C) His isoquant for producing the 70% score identifies all the different ways he would like to achieve a 70% score.
 - D) Fabian will get a 70% score on the exam

31. Since females in the US tend to marry at a younger age than males, women born during the early portion of the baby boom (starting 1945) entered the "marriage market" before their male counterparts creating a situation in the 1960's where there were more potential brides than grooms. The 1960's ushered in the Sexual Revolution. The "pill" became widely available and the frequency of pre-marital sex jumped drastically. Luckily, this was before the time of AIDS. Robert Frank, a noted economist, recently speculated in the New York Times that the increased competition for grooms caused by the baby boom might be responsible for some of the jump in the incidence of pre-marital sex that started in the 1960's.
- A) All of the other four choices are reasonable.
 - B) Frank's hypothesis seems to require the assumption that marriage-age females believe that having sex before marriage will increase the probability that they will get married, or at least believed this back then.
 - C) This is an accurate description of Frank's hypothesis, whether it is correct is another matter.
 - D) Frank would likely say that the demand curve for grooms shifted to the right, supply curve constant, when the baby-boom females came of age.
 - E) An alternative to Frank's hypothesis is that the jump in pre-marital sex was completely due to the pill becoming widely available.
32. Consider a world with two commodities: beer and autographed photos of Lindsay Lohan. Rhonda love pictures of Lindsay (the more the better) but is indifferent to the amount of beer she drinks (Rhonda does not care whether she drinks a bottle, a case or a truckload). Consider Rhonda's indifference curves with beer on the vertical axis and pictures of Lindsay on the horizontal axis. Rhonda's indifference curves are vertical lines?
- A) True
 - B) False

When I wrote this question I did not know that Lindsay would be appearing in Playboy. She is apparently broke and in need of money, and currently in jail.

33. Consider a world with only two commodities: beer and bibles. For Wilma, bibles are a good but for Wilma beer starts off as a good but eventually turns into a bad. Consider Wilma's indifference curves with beer on the horizontal axis. Which statement is both correct and most informative?
- A) Her indifference curves are shaped like an inverted U (first the slope is positive but then switches to negative)
 - B) Her indifference curves are all upward sloping
 - C) Her indifference curves are all downward sloping.
 - D) **Her indifference curves are U-shaped (first the slope is negative but then switches to positive)**

Beer is on the horizontal axis, bibles on the vertical. At low quantities of beer and bibles both are goods. Pick a low quantity of beer and bibles where both are goods. In the neighborhood of this bundle the indifference curve associated with this bundle will be downward sloping. (If you get more of one, you need to get less of the other to keep you on the same indifference curve.) But as we move down and to the right along this curve (increasing beer and decreasing bibles) beer turns into a bad, so Wilma has to be compensated with more bibles to put up with more beer when the level of beer is high. So, at high levels of beer, the indifference curve is positively sloped.

A great deal of time in the review session was spent on this topic and related questions were asked on all of the previous exams.

34. When gas costs \$3/gallon I buy 25 gallons a week and drive 500 miles a week. When gas costs \$4/gallon I buy 15 gallons and drive 300 miles a week. Using the mid-point method for calculating elasticities, which statement is both correct and most informative
- A) An increase in the price of gas from \$3 a gallon to \$4 a gallon is a 33% increase
 - B) In this range, the demand for gas is price inelastic, and the gas-price elasticity of miles driven is negative and inelastic
 - C) In this range, the demand for gas is price elastic, and the gas-price elasticity of miles driven is negative and elastic
 - D) In this range, my demand for gas is price elastic, and my gas-price elasticity of miles driven is negative and inelastic.
35. Fred is paid per mile skied. Her only cost is the value of her time. Her average total cost is calculated as total cost divided by miles skied.
- A) True
 - B) False

36. The relationship between an individual's consumption bundle and his or her utility is called a:
- A) production function.
 - B) utility function.
 - C) demand function.
 - D) consumption function.
37. Wanda spends her entire budget on warm soda (\$1 can) and cold pizza (\$2 slice). Currently she is getting 30 utils of utils from the last soda she is consuming, and 80 utils from the last slice of pizza she is consuming Wanda is consuming
- A) her utility maximizing combination of soda and pizza
 - B) too little soda and too much pizza
 - C) too much soda and too little pizza
38. Suppose Alice consumes only wine and cheese. Alice's income increases, the price of wine decreases and the price of cheese decreases. Consider Alice's budget line with wine on the vertical axis and cheese on the horizontal axis. What will happen to the slope of Alice's budget line?
- A) It becomes steeper.
 - B) It becomes flatter.
 - C) **There is not enough information to tell.**
 - D) It necessarily remains the same.

Wine is on the vertical axis and cheese is on the horizontal axis. If the price of wine decreases, holding the price of cheese constant, the budget line gets steeper. If the price of cheese decreases, holding the price of wine constant, the budget line gets flatter. Since the two price changes are pushing in opposite directions with respect to the slope, and we don't know how much each price changed, we don't know whether the new budget line will be steeper or flatter.

Draw three budget lines: the original one, one with just the price of wine decreasing, and one with just the price of cheese decreasing.

A change in income has no effect on relative prices, so no effect on the slope of the budget line.

39. Suppose Alice consumes only wine and cheese. Alice's income increases, the price of wine increases and the price of cheese decreases. Consider Alice's budget line with wine on the vertical axis and cheese on the horizontal axis. What will happen to the slope of Alice's budget line?
- A) There is not enough information to tell.
 - B) It becomes flatter.
 - C) It necessarily remains the same.
 - D) It becomes steeper.

40. The goal of a firm is to minimize its costs.
- A) True
 - B) **False**

Minimum costs are zero. The firm does not want to make its costs zero. A correct statement would be that the profit-maximizing firm will produce the profit-maximizing level of output in the minimum cost way. That is, minimize the cost of producing their chosen level of output.

41. Scott operates a business that takes people on boat tours in Crystal River, Florida. The amount of fuel Scott uses each day is a variable input.
- A) **True**
 - B) **False**

I took this question from the test bank for the book. We have decided it is a bad question so marked everyone correct on this question when the exams were graded. The issue is whether fuel use varies from day to day (is a variable cost). The problem is that there are different sorts of cruises. The issue is whether the boat makes the same trip every day (independent of the number of passengers), or not. I was thinking of a situation where the cruise always starts and ends at the same place and if no one buys a ticket then the boat goes nowhere and uses no fuel. In which case, the answer is true. However, one might imagine a cruise where people can get on or off at different places, so the boat has to make the same trip everyday independent of whether anyone gets on.

42. Justin is in college and has \$16 a day to spend on food. Given his allergies and intolerance to lactose, he can consume only pesto pizza without cheese and seaweed salad. The pizza costs \$2 a slice and the salad \$4 a bowl. Justin belongs to the Church of Skinny which allows one to consume no more than 800 calories per day. Justin is a devout member. Each slice of pizza has 200 calories and each bowl of seaweed has 100 calories. In addition, Justin's mother instructed him to waste no more than one hour a day eating, and Justin obeys his mother. It takes Justin 10 minutes to eat a slice of pizza and 15 minutes to knock back a bowl of seaweed salad. If Justin spends all of his \$16 on food, then, per day
- A) Justin can consume a maximum of 8 dishes of salad
 - B) Justin can consume a maximum of 3 slices of pizza
 - C) Justin can consume a maximum of 4 dishes of salad
 - D) Justin can consume a maximum of 6 slices of pizza

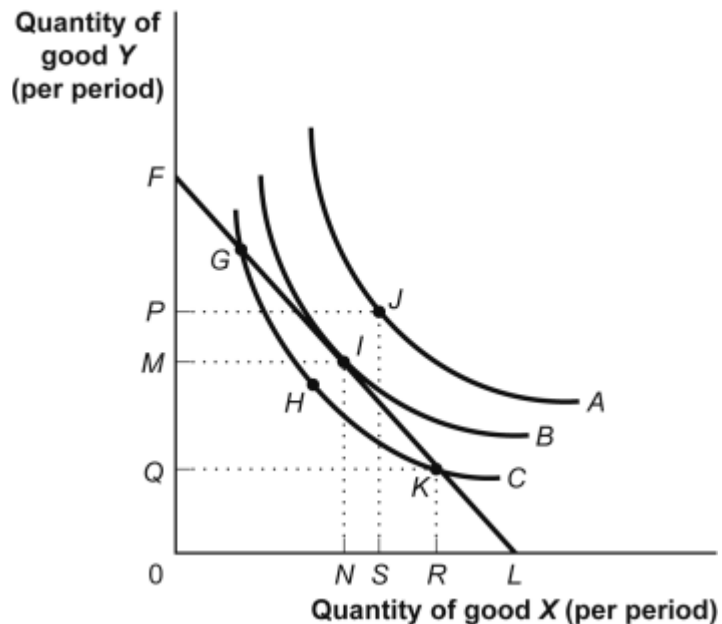
43. Fred, the skier, just got a bunch of new non-skiing friends who want Fred to hang out with them watching, over and over, episodes of the TV show *Pretty Little Liars*. Fred likes *Pretty Little Liars*. This widening of her social circle will likely
- A) increase the number of miles that she skis because it has caused her "wage rate" to decrease.
 - B) have no effect on the number of miles she skis because it does not affect her "wage rate."
 - C) increase the number of miles that she skis because it has caused her "wage rate" to increase.
 - D) decrease the number of miles that she skis because it has caused her "wage rate" to increase

The opportunity cost of her skiing increases.

44. Marginal cost is the change in:
- A) total cost resulting from a one-unit change in output.
 - B) total cost resulting from a one-unit change in a variable input.

Use the following to answer question 45:

Figure: Consumer Equilibrium



45. (Figure: Consumer Equilibrium) Assume the consumer is currently consuming at point *G*. Given the budget constraint shown, the consumer would be able to realize more total utility by choosing point _____, all other things held equal.
- A) *H*
 - B) *I*
 - C) *J*
 - D) *K*

Answer Key

1. C
2. A
3. B
4. D
5. B
6. D
7. C
8. B
9. C
10. B
11. A
12. A
13. B
14. A
15. A
16. A
17. D
18. B
19. D
20. A
21. A
22. A
23. A
24. B
25. B
26. D
27. B
28. C
29. D
30. A
31. A
32. A
33. D
34. C
35. A
36. B
37. C
38. C
39. B
40. B
41. Lousy question, we gave everyone full credit.
42. C
43. D
44. A

45. B