Economics 102 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Summer 2013

07/03/13

Answers to First Midterm

**Version 1**

**DO NOT BEGIN WORKING UNTIL THE INSTRUCTOR TELLS YOU TO DO SO**

**READ THESE INSTRUCTIONS FIRST.**

You have 75 minutes to complete the exam. The exam consists of **3 problems worth 10 points each and 20 multiple choice questions worth 3.5 points each**. Please accurately and completely provide your **name** on the exam booklet.

**NO CELL PHONES, CALCULATORS, OR FORMULA SHEETS ARE ALLOWED.**

**PICK THE BEST ANSWER FOR EACH QUESTION.**

* **When you are finished, please get up quietly and bring your scantron sheet and this exam booklet to the place indicated by the instructors.**

**Multiple Choice \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Problems:**

 **Problem 1 \_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Problem 2 \_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Problem 3 \_\_\_\_\_\_\_\_\_\_\_\_\_**

**TOTAL \_\_\_\_\_\_\_\_\_\_\_\_\_**

**I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, agree to neither give nor receive any help on this exam from other students. Furthermore, I understand that use of a calculator on this exam is an academic misconduct violation.**

**Signed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**I. Multiple Choice (20 questions worth 3.5 points each)**

Use the following information to answer the next **three** questions.

When Josie decreases her production of pants by 3 units she finds that she can increase her production of shirts by 5 units. Her production possibility frontier between pants and shirts is linear. Josie also knows that the maximum amount of shirts she can produce from her given amount of resources, her technology and the time she has available to produce shirts and pants is 50 shirts.

1. Given this information, which of the following points is on Josie’s PPF?

a. 10 pairs of pants and 24 shirts.

b. 21 pairs of pants and 15 shirts.

c. 27 pairs of pants and 10 shirts.

d. 30 pairs of pants and 5 shirts.

2. Given this information Josie’s opportunity cost of producing 5 shirts is

a. 3/5 pair of pants.

b. 5 pairs of pants.

c. 5/3 pairs of pants.

d. 3 pairs of pants.

3. Suppose that Josie receives a new type of technology that allows her to produce twice as many pairs of pants as she could initially. The technology does not impact Josie’s ability to produce shirts. Which of the following equations best represents Josie’s production possibility frontier given this information? In each equation P is pairs of pants and S is number of shirts.

a. 5P = 300 – 6S

b. P = 60 – (5/6)S

c. S = 60 – (5/6)P

d. 5S = 300 – 5P

Use the following information to answer the next **four** questions.

Suppose that Eric and Marie both produce lamps and rugs. Both Eric and Marie have linear production possibility frontiers in these two goods. Two production points that sit on Eric’s production possibility are 100 lamps and 20 rugs or 50 lamps and 40 rugs. Two production points that sit on Marie’s production possibility frontier are 40 lamps and 40 rugs or 20 lamps and 80 rugs. Assume that Eric and Marie have the same amount of resources, use the same technology, and face the same time constraint when drawing their production possibility frontiers.

4. Given this information, which of the following statements is true?

a. Eric has the absolute advantage in lamp making and Marie has the comparative advantage in lamp making.

b. Eric has the comparative advantage in rug making and Marie has the comparative advantage in lamp making.

c. Eric has the comparative advantage in lamp making and Marie has the absolute advantage in rug making.

d. Eric and Marie face the same opportunity costs for making lamps or rugs.

5. Which of the following statements is true?

a. For Marie the opportunity cost of producing 20 lamps is 40 rugs.

b. For Marie the opportunity cost of producing 100 rugs is 50 lamps.

c. For Eric the opportunity cost of producing 10 rugs is 25 lamps.

d. Answers (a), (b) and (c) are all true answers.

6. If Eric and Marie decide to specialize according to comparative advantage and then trade with one another, then the “kink” point on their joint production possibility frontier will have the coordinates

a. (L, R) = (120, 150)

b. (L, R) = (210, 180)

c. (L, R) = (180, 210)

d. (L, R) = (150, 120)

7. Which of the following range of trading prices in terms of lamps will both Eric and Marie accept when trading 20 rugs?

a. 20 rugs will trade between 5 lamps and 25 lamps.

b. 20 rugs will trade between 8 lamps and 40 lamps.

c. 20 rugs will trade between 10 lamps and 50 lamps.

d. 20 rugs will trade between ½ lamp and 5/2 lamps.

8. When Paul Krugman analyzes the effect of a proposed change in government policy on U.S. GDP he is engaging in \_\_\_\_\_\_\_\_\_\_\_\_ economics and when he discusses in his NY Times opinion column what he thinks is the best tax policy for the U.S. economy he is engaging in \_\_\_\_\_\_\_\_\_\_ economics.

a. normative; positive

b. positive; positive

c. normative; normative

d. positive; normative

9. Suppose there are ten identical consumers in a market (that is, they all have exactly the same preferences). The demand curve for one of these consumers is given by the equation 10P = 160 – 16Q. What is the x-intercept of the market demand curve given this information?

a. 1600

b. 1000

c. 100

d. 160

10. Suppose that income increases and that good X is an inferior good. At the same time the cost of iron, an input in the production of good X, increases. From this information and holding everything else constant it is possible to conclude that relative to the initial equilibrium

a. The equilibrium price may have increased, decreased or remained the same and the equilibrium quantity has definitely decreased.

b. The equilibrium price may have increased, decreased or remained the same and the equilibrium quantity has definitely increased.

c. The equilibrium price has increased and the equilibrium quantity may have increased, decreased or remained the same.

d. The equilibrium price has decreased and the equilibrium quantity may have increased, decreased or remained the same.

11. Suppose that the population in Microland increases at the same time that the price of labor used in manufacturing goods and services increases for all producers in Microland. From this information and holding everything else constant, we can conclude that

a. The equilibrium price and quantity in the market for any good has increased relative to the initial equilibrium price and quantity.

b. The equilibrium price and quantity in the market for any good has decreased relative to the initial equilibrium price and quantity.

c. The equilibrium price in the market for any good has increased relative to the initial equilibrium price and the equilibrium quantity in the market for any good may have increased, decreased or remained the same as the initial equilibrium quantity.

d. From the given information it is not possible to tell with certainty what happened to the equilibrium price and quantity relative to the initial equilibrium price and quantity.

Use the following information to answer the next **three** questions.

Consider the small, closed economy of Uropia. In Uropia the market for computers is characterized by the following demand and supply equations where Q is the quantity of computers and P is the price per computer:

Domestic Demand: Q = 200 – (1/5)P

Domestic Supply: Q = (1/15)P – (40/3)

Currently, the world price of computers is $320.

12. If the computer market is closed in Uropia, then the value of total surplus is \_\_\_\_\_\_\_\_\_\_, the equilibrium price in this market is \_\_\_\_\_\_\_\_\_\_\_, and the equilibrium quantity of computers in this market is \_\_\_\_\_\_\_\_\_\_.

a. $4000; greater than the world price of computers;40 computers

b. $800; greater than the world price of computers;40 computers

c. $16,000;greater than the world price of computers;40 computers

d. $16,000; less than the world price of computers;40 computers

13. Given the above information and holding everything else constant, if Uropia opens the computer market to trade, which of the following statements is true?

I. Opening this market to trade will benefit both domestic consumers and domestic producers.

II. People in Uropia will buy more computers if this market is opened to trade.

III. Opening this market to trade will expand the markets that Uropia’s domestic producers of computers will now be able to sell to.

1. Statements I, II and III are all true statements.
2. Statements I and II are true statements.
3. Statements I and III are true statements.
4. Statements II and III are true statements.
5. Statement II is a true statement.

14. Suppose that the government of Uropia decides to open this market to trade while simultaneously imposing a quota of 104 imports. Suppose the government wants to have the same impact on this market as this quota creates but instead use a tariff. What would the price of computers in Uropia with the tariff need to be in order to have the tariff and the quota create the same impact on this market?

a. The tariff would need to raise the price to $390.

b. The tariff would need to raise the price to $400.

c. The tariff would need to raise the price to $410.

d. The tariff would need to raise the price to $420.

15. Consider the market for oranges in a small, closed economy. Currently the domestic price of oranges in this economy is less than the world price of oranges. From this information you can conclude that

I. If this economy were to open its orange market to trade this country would export oranges.

II. If this economy were to open its orange market to trade the domestic orange producers in this economy would be in favor of this policy change.

III. If this economy were to open its orange market to trade more oranges would be consumed in this small economy.

a. Statement I is a true statement.

b. Statement II is a true statement.

c. Statement III is a true statement.

d. Statements I, II and III are all true statements.

e. Statements I and II are true statements.

16. Suppose that the market for calculators is initially in equilibrium. Suppose that a new manufacturer of calculators enters this market. Given this information and holding everything else constant, there will be

a. A shift in the supply curve and a movement along the demand curve in the market for calculators.

b. A shift in the demand curve and a movement along the supply curve in the market for calculators.

c. A shift in both the supply curve and the demand curve in the market for calculators.

d. Higher prices in the market for calculators because an extra manufacturer must result in an increase in the costs of producing a calculator.

Use the following information to answer the next **two** questions.

Mort and Cindy are the only two consumers of doughnuts in a market. Their individual demand curves are given by the following equations where P is the price per doughnut and Q is the quantity of doughnuts:

Mort’s demand curve: Q = 10 – P

Cindy’s demand curve: Q = 5 - P

You also are told that the market supply curve is linear and that when the price is $4 per doughnut 16 doughnuts are supplied and when the price increases to $10 the quantity of doughnuts supplied increases to 40 doughnuts.

17. Given the above information and holding everything else constant, the equilibrium price in this market will be

a. $1

b. $1.50

c. $2

d. $2.50

18. Suppose that the government levies a tax on producers for each doughnut they produce. If this tax is equal to $3 per unit and holding everything else constant, then the equilibrium quantity in this market will be equal to

a. 5 units

b. 6 units

c. 8 units

d. 10 units

Use the following information to answer the next **two** questions.

You know that suppliers of bubble gum are willing to produce 100 units of gum if they receive a price of 50 cents per unit and you know that demanders of bubble gum are willing to pay $1.00 per unit if they consume 100 units. Furthermore, you know that when the price of bubble gum is 30 cents per unit there is excess demand of 190 units of bubble gum. When the price of bubble gum is 30 cents per unit, then the quantity of bubble gum demanded is 210 units. For this problem assume that both the demand for bubble gum and the supply of bubble gum are linear.

19. Given this information, if there is a quota limit of 100 units of bubble gum imposed by the government in this market then

a. There will be a deadweight loss due to the imposition of this quota limit.

b. The imposition of this quota limit allows producers to capture a part of consumer surplus.

c. In the absence of this quota limit or any other type of government intervention, consumers would purchase more bubble gum.

d. Answers (a), (b) and (c) are all true answers.

e. Answers (a) and (b) are true answers.

20. Given the above information the market supply curve is

a. P = 20 + 400Q

b. Q = 20 + (1/40)P

c. 80P = 20 + (1/5)Q

d. 4P = 80 + 160Q

e. None of these answers is the equation for the market supply curve.

**II. Problems (3 problems worth 10 points each)**

1. Mary and Susan each have forty hours a week that they can devote to their business: Notes and More that provides two services. These services are 1) correspondence to potential customers and 2) development of lists of potential new customers. Mary and Susan each have linear production possibility frontiers when it comes to producing these two services. The following table provides the number of hours of labor it takes for Mary and Susan to produce one unit of correspondence (C) or one unit of new lists (L).

|  |  |  |
| --- | --- | --- |
|  | Number of Hours of Labor Needed to Produce One Unit of Correspondence (C)  | Number of Hours of Labor Needed to Produce One Unit of Lists (L) |
| Mary | 2 Hours of Labor | 1 Hour of Labor |
| Susan | 4 Hours of Labor | 1 Hour of Labor |

a. (4 points) In the space below draw two separate graphs representing the production possibility frontiers per week for Mary and Susan. Label each graph completely including whose PPF is represented. Measure correspondence (C) on the vertical axis and lists (L) on the horizontal axis. Provide the numeric values for all intercepts.

Answer:



b. (2 points) What good does Mary have the comparative advantage in production? Explain your answer for full credit.

Answer:

Mary has the comparative advantage in producing correspondence relative to Susan because the opportunity cost of producing a unit of correspondence is lower for Mary than for Susan. Mary’s opportunity cost of 1 units of correspondence is 2 lists while Susan’s opportunity cost of 1 unit of correspondence is 4 lists.

c. (2 points) In the space below draw the joint production possibility frontier for Mary and Susan. Measure correspondence (C) on the vertical axis and make sure you label all axes, as well as the coordinates for any “kink” points or intercepts.

Answer:



d. (2 points) Using the number line technique discussed in class provide a range of trading prices measured in lists for 1 unit of correspondence. Provide a second number line to illustrate a range of trading prices measured in lists for 20 units of correspondence. Label your diagrams fully and carefully for full credit.

Answer:



2. Consider the market for wheat. We will assume that this is a competitive market and that each wheat farmer’s production is identical to all other wheat farmers’ production. Suppose there are 100 wheat farmers and each wheat farmer’s supply curve is given by the following equation where P is the price per bushel of wheat and q is the quantity of bushels of wheat supplied by that farmer:

Individual wheat farmer’s supply of wheat curve: q = (1/10)P

Furthermore, you know that the market demand curve for wheat is given by the following equation where Q is the total quantity of bushels of wheat demanded:

Market demand curve for wheat: Q = 500 – 10P

a. (2 points) Find the market supply curve expressing the relationship between Q, the total quantity of wheat supplied by all the farmers, and P, the price per bushel of wheat. Write the equation in slope-intercept form as well as in x-intercept form.

Answer:

When Pis equal to 0, then q = 0 for the individual farmer. Thus, for the market we know that all farmers will produce 0 units of the good when the price per bushel is $0. When P is equal to $100, then the individual farmer will produce 10 bushels of wheat. This implies that when P is equal to $100, then the total amount produced in the market will be equal to 100(10 bushels of wheat) or 1000 bushels of wheat. Thus, we now have two points on the market supply curve: (Q, P) = (0, $0) and (1000, $100). We can use those two points to write the market supply curve:

P = (1/10)Q or

Q = 10P

b. (2 points) Given the above information calculate the equilibrium price and the equilibrium quantity in the market for wheat. Make sure you show your work in a logical, carefully organized manner.

Answer:

The market demand curve is Q = 500 – 10P and the market supply curve is Q = 10P. Using these two equations we get:

500 -10P = 10P

500 = 20P

P = 25

Q = 500 – 10 P = 500 – 10(25) = 250

Or, Q = 10P = 10(25) = 250

c. (6 points) Suppose that another economy enters this market and increases the number of consumers of wheat so that at every price 400 additional bushels of wheat are consumed. Given this information and holding everything else constant, calculate the new value of consumer surplus, the new value of producer surplus, and the new value of total surplus in this market. Make sure you show your work in a logical, carefully organized manner. Put your answers in the provided blanks.

Consumer Surplus = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Producer Surplus = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total Surplus = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Answer:

The new market demand curve will be Q = 900 – 10P and the market supply curve will be Q = 10P. Using these two equations we can find the equilibrium quantity and price:

900 – 10P = 10P

20P = 900

P = 45

Q = 900 – 10(45) = 450

Or, Q = 10P = 10(45) = 450

CS = (1/2)(90 – 45)(450) = $10,125

PS = (1/2)(45 – 0)(450) = $10,125

TS = CS + PS = $20,250

Consumer Surplus = \_\_\_\_$10,125\_\_\_\_\_

Producer Surplus = \_\_\_\_\_$10,125\_\_\_\_

Total Surplus = \_\_\_\_\_$20,250\_\_\_\_\_\_\_

3. Consider the market for kiwi fruit in a small, closed economy. The domestic demand and domestic supply curves for kiwi fruit in this economy can be described the following equations where P is the price per unit of kiwis and Q is the number of units of kiwis:

Domestic Demand: P = 10 – (1/4)Q

Domestic Supply: P = 2 + (3/4)Q

Initially the world price of kiwis is $4 per unit of kiwis.

a. (2 points) If this market opens to trade, what will be the quantity of exports or imports of kiwis given the above information and holding everything else constant? Assume that it is possible to export or import fractional amounts of kiwi units.

Answer:

When this market opens to trade, kiwis will sell for $4 per unit. At $4 per unit domestic suppliers will supply (8/3) units of kiwis and domestic demanders will demand 24 units. Therefore there will be 21.3 units of kiwis imported into this economy.

b. (2 points) When this market opens to trade, what is the value of consumer surplus? In your answer show how you calculated this amount.

Answer:

CS = (1/2)($10 per unit of kiwis - $4 per unit of kiwis)(24 units of kiwis) = $72

c. (2 points) Suppose that the government of this small economy opens this market to trade and, at the same time, imposes a quota of 16 units of imported kiwis. Given this quota and holding everything else constant, calculate the value of consumer surplus, producer surplus, and total surplus. Record your answers in the given spaces. For full credit show how you calculated these values.

Consumer Surplus = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Producer Surplus = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total Surplus = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Answer:

Consumer Surplus = \_\_\_\_\_\_\_$50\_\_\_\_\_\_\_\_\_\_\_

Producer Surplus = \_\_\_\_\_\_\_\_$6\_\_\_\_\_\_\_\_

Total Surplus = \_\_\_\_\_\_\_\_\_\_$56\_\_\_\_\_\_\_\_\_\_

Answer:

When the import quota is set at 16 units we can write that at the quota price, the Qs + quota = Qd. Or,

(4/3)P – (8/3) + 16 = 40 – 4P

Solving for P, we get:

4P – 8 + 48 = 120 – 12P

16P + 40 = 120

16P = 80

P = $5 per unit of kiwis

Qs = (4/3)(5) – (8/3) = 12/3 = 4 units of kiwis supplied by domestic producers

Qd = 40 – 4(5) = 20 units of kiwis demanded by domestic consumers

Thus, the quota is equal to Qd – Qs = 40 – 20 = 16 units of imported kiwis

CS = (1/2)($10 per unit of kiwis - $5 per unit of kiwis)(20 units of kiwis) = $50

PS = (1/2)($5 per unit of kiwis - $2 per unit of kiwis)(4 units of kiwis) = $6

TS = $56