Econ 102 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Summer 2014

Answers to Quiz #2

Please write all answers neatly and legibly.

1. (2 points) Consider the market for bananas that is initially described by the following equations where Q is the quantity of bananas and P is the price per unit of bananas:

Market Demand: Q = 50 – (1/2)P

Market Supply: Q = (1/6)P – 20/6

Suppose that something happens in this market and after all adjustment to this event, the market for bananas finds itself at a new equilibrium price of $60 and a new equilibrium quantity of 6.7 units of bananas. Which of the following (circle your preferred answer) is most likely the cause of this new equilibrium?

1. The market demand curve shifted.
2. The market supply curve shifted.
3. (2 points) Suppose the market for coffee beans initially has ten identical producers. The initial market supply curve is given by the following equation where Q is the quantity of pounds of coffee beans supplied and P is the price per pound of coffee beans:

Initial Market Supply Curve: Q = 50P - 100

Suppose that two of these firms exit the coffee bean market and you have been asked to provide an equation that represents the new market supply curve given the exit of these two firms. You have also been asked to write this new market supply curve in slope intercept form. Show the work you did to find this new market supply curve in the space below.

Answer:

From the given information we know that there are now 8 identical firms, but you will need to do a bit of figuring to find the new market supply curve. Let’s first turn to the initial market supply curve: Q = 50P - 100. If we consider what the individual supply curve must be in order to get this market supply curve, we will have q = 5P – 10 where q is the quantity of pounds of coffee beans supplied by a representative firm. Verify that this is the correct individual supply curve: at a price of $12 per pound of coffee beans, the individual firm will be willing to supply 50 pounds of coffee beans; if there are 10 identical firms, then at a price of $12 per pound of coffee beans, the total quantity supplied in the market will be 10\*50 or 500 pounds. The (Q, P) = (500, $12) does “sit” on the market supply curve you were given.

Now, if there are only eight firms, then at a price of $12 per pound there will be 8\*50 or 400 pounds of coffee beans supplied. You know that when the price of coffee beans is $2, zero pounds of coffee beans are supplied. You now know two points on the new market supply curve: (Q, P) = (0, $2) and (400, $12). You can write the new market supply curve with these two points by first finding the slope and then recalling that the y-intercept for the new market supply curve will be the same as the y-intercept from the initial market supply curve. Thus, slope of new market supply curve = (12 – 2)/(400 – 0) = 1/40. New market supply curve is P = 2 + (1/40)Q.

We can also find the new market supply curve by taking the individual supply, q = 5P – 10 and multiplying it by the new number of firms in the market, 8. This would yield market supply = Q = 8q = 40P - 80

1. (2 points) Consider the market for pencils. Suppose this market is initially in equilibrium. Then, at the same time suppose that the price of graphite, a critical input used in the production of pencils increases and the number of school age children increases. Given this information and holding everything else constant, what do you predict will happen to the equilibrium price and equilibrium quantity in the market for pencils? Be specific in describing any shifts and/or movements in this market.

Answer:

When the price of graphite increases this will cause the supply curve for pencils to shift to the left at every price. The increase in the number of school age children will cause the demand for pencils to shift to the right. With certainty we can know that the equilibrium price in this market increases relative to its initial level while the equilibrium quantity may increase, decrease or remain the same relative to the initial equilibrium quantity. Therefore the equilibrium quantity in this market will be indeterminate given these two changes.

1. Suppose the domestic market for pens in Nicia, a small economy, is described by the following equations where P is the price per pen and Q is the quantity of pens:

Domestic Demand: Q = 540 – 90P

Domestic Supply: Q = 45P

Suppose that the world price of pens is $1 per pen.

a. (1 point) Given the above information, if the pen market in Nicia opens to trade how many pens will be exported or imported by Nicia? Make sure your answer identifies whether Nicia will import or export pens.

Answer:

If the market opens to trade the pens will sell for the world price of $1 per pen. If P = 1, then the quantity of pens demanded domestically in Nicia will be 450 pens and the quantity of pens supplied domestically in Nicia will be 45 pens. The difference between the quantity demanded domestically and the quantity supplied domestically will be the number of pens imported: Nicia will import 405 pens.

b. (1 point) Given the above information, if the market for pens in Nicia opens to trade, what will be the change in consumer surplus compared to the level of consumer surplus when this market was closed to trade? Show how you found your answer.

Answer:

Consumer surplus in the pen market in Nicia when this market was closed to trade was equal to (1/2)($6 per pen - $4 per pen)(180 pens) = $180. Consumer surplus in Nicia when this market opens to trade will be equal to (1/2)($6 per pen - $1 per pen)(450 pens) = $1125. Consumer surplus increases by $945 when Nicia opens this market to trade.

c. (2 points) Suppose that Nicia opens this market to trade while simultaneously implementing an import quota of 135 pens. Given this information, what is the value of the deadweight loss in this market due to the imposition of this quota? Show how you found your answer to get full credit.

Answer:

To answer this question you will first need to determine the price of pens with this import quota. With the import quota we know that the quantity supplied domestically plus the import quota will equal the quantity demanded domestically or 45P + 135 = 540 – 90P. Solving for P we get P = $3 per pen. (You can verify that if the price of pens is $3, that the quantity supplied domestically is 135 pens and the quantity demanded domestically is 270 pens for a difference of 135 pens that will be imported with the quota.)

The deadweight loss due to the imposition of this import quota can be calculated as follows:

DWL = (1/2)($3 per pen - $1 per pen)(135 pens – 45 pens) + (1/2)($3 per pen - $1 per pen)(450 pens – 270 pens) = $270.