# Practice Midterm Answer Key

Multiple Choice

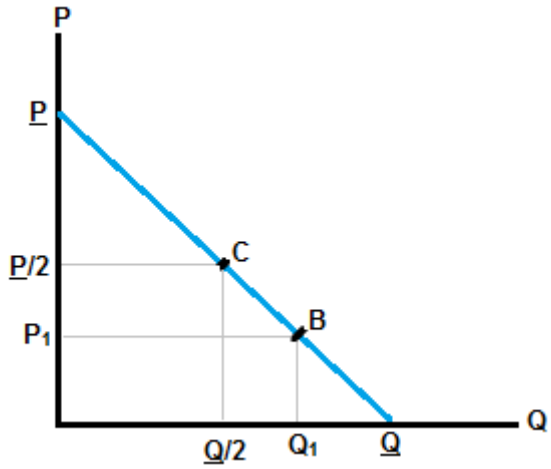
1. C
2. D
3. A
4. C
5. A
6. D
7. D
8. C
9. D
10. D
11. C
12. B
13. D
14. E
15. D

Short Answer

1. Suppose the demand for Apple i-Pads is a straight line. The midpoint of the demand is point C. A point on the demand corresponding to a lower price and a larger quantity demand that C is labeled as point B.

a) Show that the price elasticity of demand at point C is 1.

*Let's begin with graphing our demand curve.*




*By the Intercept Theorem, the quantity and price pair that correspond to the midpoint (point C) is (Q/2, P/2).*

*Next, let use the single point method of calculating elasticities to finish our proof. Recall, the single point method formula is*

$$\varepsilon_D = \frac{\%\Delta Q_D}{\%\Delta P} = \frac{\Delta Q_D}{\Delta P}\frac{P}{Q}$$

*Note that $\Delta Q_D/\Delta P$ is the inverse of the slope or, put another way, "run over rise". Using the information from the graph we can show*

$$\varepsilon_D = \frac{\underline{\underline{Q}}}{\underline{P}} \times \frac{\underline{\underline{P}}}{\underline{\underline{Q}}} = \frac{\underline{\underline{Q}}}{\underline{P}} \times \frac{\underline{P}}{\underline{\underline{Q}}} = 1$$

*Q.E.D.*

b) Show that the price elasticity of demand at point B is less that 1.

*Referring to the figure from part a, the following must be true of point ($Q_1$, $P_1$):*

$$Q_1 = \frac{\underline{\underline{Q}}}{x} \quad such\ that \quad x \in (0,2)$$

$$P_1 = \frac{\underline{\underline{P}}}{y} \quad such\ that \quad y \in (2,\infty)$$

*Again, applying the single point method formula yields the following:*

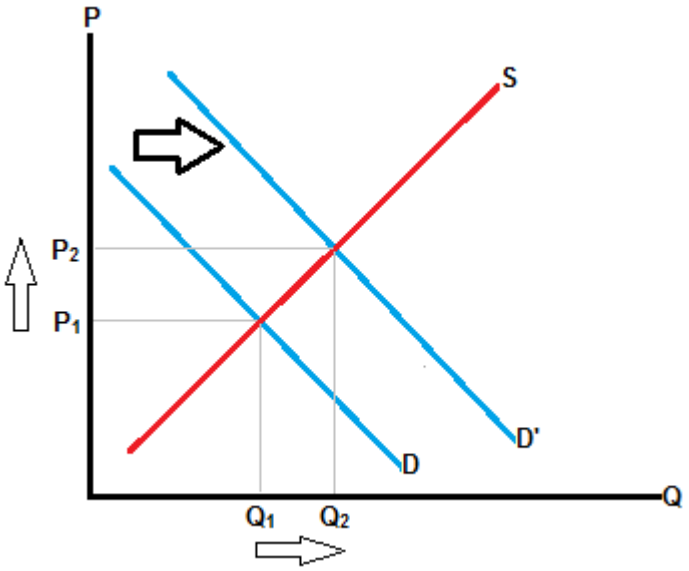
$$\varepsilon_D = \frac{\underline{\underline{Q}}}{\underline{P}} \times \frac{\underline{\underline{P}}}{\underline{\underline{Q}}} = \frac{\underline{\underline{Q}}}{\underline{P}} \times \frac{x\underline{P}}{y\underline{Q}} = \frac{x}{y} < 1$$

*Q.E.D.*

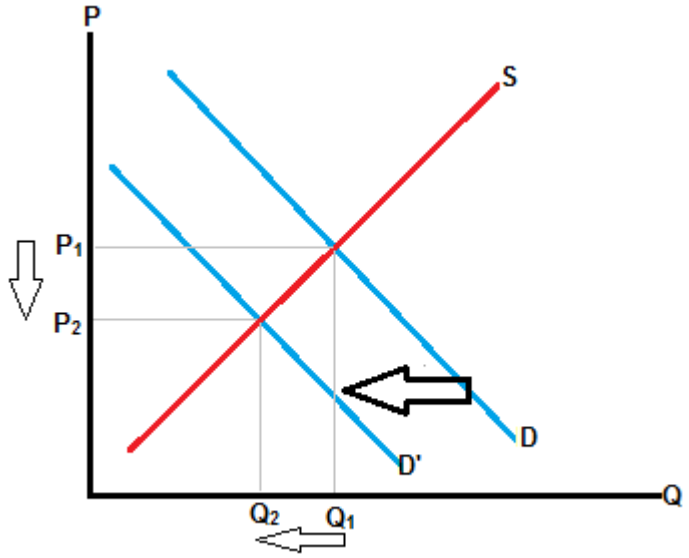
2. State whether each of the following events will result in a movement along the demand curve for Carl's Jr. Bacon Cheeseburger or whether it will cause the curve to shift. If the demand curve shifts, indicate whether it will shift to the left of the right and draw a graph to illustrate the shift.

a) The price of McDonald's Big Mac hamburgers increases

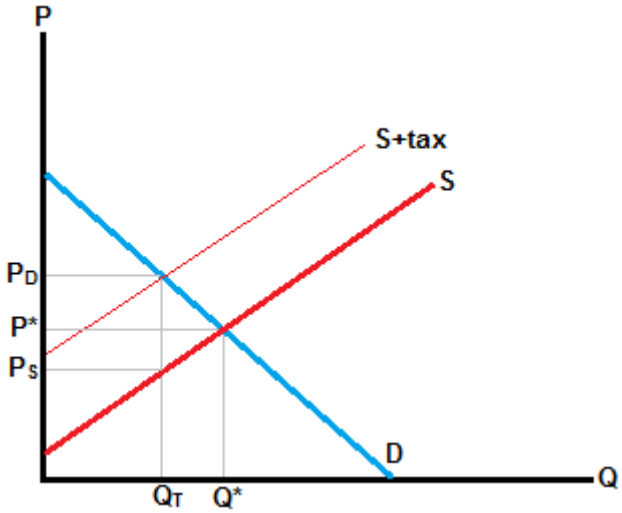
*McDonald's Big Macs are substitutes for Carl's Jr. Bacon Cheeseburgers. Therefore the increase in the price of Big Macs will increase the demand for Bacon Cheeseburgers. This causes the demand curve to shift out to the right, thus increasing the equilibrium quantity and price as illustrated below:*




b) Because of a shortage of potatoes, the price of French fries increase
*Potatoes are a complement good to Bacon Cheeseburgers. Therefore, an increase in the price of French fries will decrease demand for Bacon Cheeseburgers. This causes the demand curve to shift in to the left, thus decreasing the equilibrium price and quantity as illustrated below.*




3. Suppose an excise tax is imposed on good A under two situations:
   a) The excise tax is imposed on the producers. Graphically show the effects of the excise tax. Show the tax incidence on the producers and the tax incidence on the consumers.

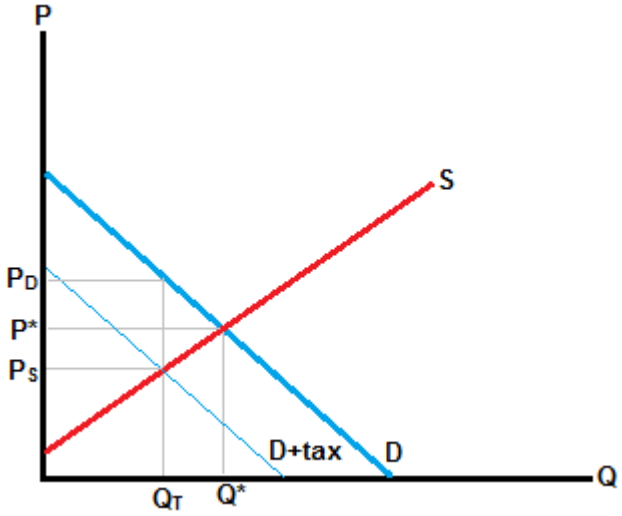



*The tax incidences are*

*-consumer = $P_D$-P**

*-producer = P*-$P_S$*

b) The excise tax is imposed on the consumers. Graphically show the effects of the excise tax. Show the tax incidence on the producers and the tax incidence on the consumers.




*The tax incidences are*

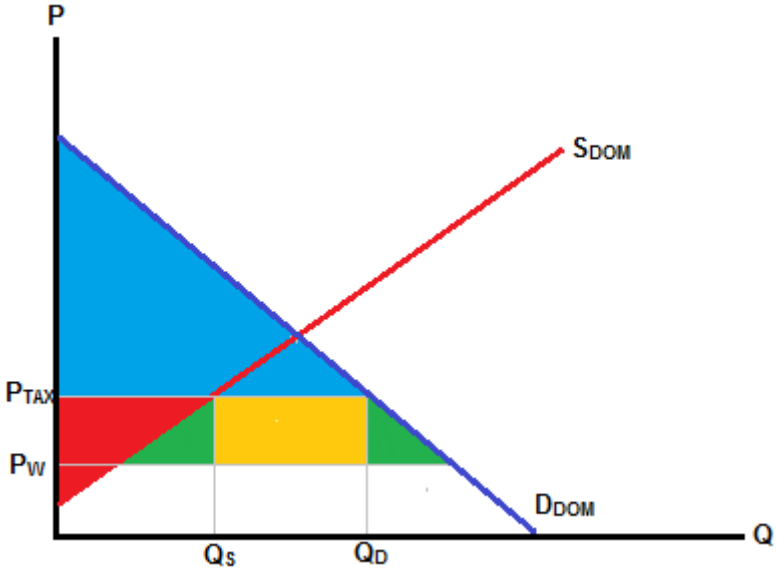
*-consumer = $P_D$-P**

*-producer = P*-$P_S$*

c) Compare the tax incidences under the two situations (a) and (b).

*Assuming the tax is of equal size in both situations the tax incidence on the consumer and producer will be the same in both (a) and (b). This is because who bears the burden of the is not determine by who pays the tax. Instead, the group with the less elastic (more inelastic) curve will bear the brunt of the tax.*

4. Suppose our government imposes a tariff on the imports of shirts. Show graphically how this would affect the U.S. consumer surplus, the U.S. producer surplus and the government tariff revenue. Indicate the deadweight loss in your graph. In an import quota is imposed how would the analysis be changed?




*Above are the effects of an import tariff. Consumer surplus is equal to the blue area. Producer surplus is equal to the red area. The yellow area is government tariff revenue and the two green triangles are the deadweight loss associated with the tariff.*

*If a import quota is enacted instead, the only difference will be who the yellow rectangle accrues to. Under a tariff it goes to the domestic government. Under a quota it becomes license-holders' revenue.*