ECON2103 Microeconomics

Chapter 9 Exercises

1. Suppose the market for widgets can be described by the following equations:

   Demand: $P = 10 - Q$ *Supply*: $P = Q - 4$

   where P is the price in dollars per unit and Q is the quantity in thousands of units. Then:
   a. What is the equilibrium price and quantity?
   b. Suppose the government imposes a tax of $1 per unit to reduce widget consumption and raise government revenues. What will the new equilibrium quantity be? What price will the buyer pay? What amount per unit will the seller receive?
   c. Suppose the government has a change of heart about the importance of widgets to the happiness of the American public. The tax is removed and a subsidy of $1 per unit granted to widget producers. What will the equilibrium quantity be? What price will the buyer pay? What amount per unit (including the subsidy) will the seller receive? What will be the total cost to the government?

2. A particular metal is traded in a highly competitive world market at a world price of $9 per ounce. Unlimited quantities are available for import into the United States at this price. The supply of this metal from domestic U.S. mines and mills can be represented by the equation $Q^S = 2/3P$, where Q^S is U.S. output in million ounces and P is the domestic price. The demand for the metal in the United States is $Q^D = 40 - 2P$, where Q^D is the domestic demand in million ounces.

   In recent years the U.S. industry has been protected by a tariff of $9 per ounce. Under pressure from other foreign governments, the United States plans to reduce this tariff to zero. Threatened by this change, the U.S. industry is seeking a voluntary restraint agreement that would limit imports into the United States to 8 million ounces per year.
   a. Under the $9 tariff, what was the U.S. domestic price of the metal?
   b. If the United States eliminates the tariff and the voluntary restraint agreement is approved, what will be the U.S. domestic price of the metal?

3. The Sugar Quota Example (Lecture notes P21) describes the effects of the sugar quota. In 2016, imports were limited to 6.1 billion pounds, which pushed the domestic price to 27 cents per pound. Suppose imports were expanded to 10 billion pounds.

   a. What would be the new U.S. domestic price?
   b. How much would consumers gain and domestic producers lose?
   c. What would be the effect on deadweight loss and foreign producers?

4. The domestic supply and demand curves for hula beans are as follows:

$$\textit{Supply}: P = 50 + Q \qquad\qquad \textit{Demand}: P = 200 - 2Q$$

   where P is the price in cents per pound and Q is the quantity in millions of pounds. The U.S. is a small producer in the world hula bean market, where the current price (which will not be affected by anything we do) is 60 cents per pound. Congress is considering a tariff of 40 cents per pound. Find the domestic price of hula beans that will result if the tariff is imposed. Also compute the dollar gain or loss to domestic consumers, domestic producers, and government revenue from the tariff.

5. In 2011, Americans smoked 16 billion packs of cigarettes. They paid an average retail price of $5.00 per pack.

   a. Given that the elasticity of supply is 0.5 and the elasticity of demand is −0.4, derive linear demand and supply curves for cigarettes.

   b. Cigarettes are subject to a federal tax, which was about $1.00 per pack in 2011. What does this tax do to the market-clearing price and quantity?

   c. How much of the federal tax will consumers pay? What part will producers pay?