سری اول تمرینات
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1. There are 10,000 identical individuals in the market for commodity X, each with a demand function given by \( Q_{dx} = 12 - 2P_x \), and 1,000 identical producers of commodity X, each with a function given by \( Q_{sx} = 20P_x \).

(a) Find the market demand function and the market supply function for commodity X.
(b) Find the equilibrium price and the equilibrium quantity.
(c) Plot, on one set of axes, the market demand curve and the market supply curve for commodity X and show the equilibrium point.
(d) Is the equilibrium condition stable? Why?
(e) What happens if, starting from the position of equilibrium in (b), the government:
   (1) imposes a price floor of $4 on commodity X?
   (2) Imposes instead a price ceiling of $2 on commodity X?

2. Suppose that from the condition of equilibrium in Problem 1, there is an improvement in the technology of producing commodity X (ceteris paribus) so that a new market supply curve is given by \( Q_{S0x} = 40,000 + 20,000P_x \).

(a) Show the new market supply curve \( (S_{0x}) \) on the graph of Problem 1.
(b) State the new equilibrium price and the new equilibrium quantity for commodity X.

3. Suppose that from the condition of equilibrium in Problem 1, there is an increase in consumers’ incomes so that the market demand curve becomes \( Q_{D0x} = 140,000 - 20,000P_x \), and at the same time there is an improvement in the technology of producing commodity X so that the new market supply curve becomes \( Q_{S0x} = 40,000 + 20,000P_x \) (see Problem 2). Everything else remains the same.

(a) Show the new market demand curve \( (D_{0x}) \) and the new market supply curve \( (S_{0x}) \) on the graph of Problem 1(c).
(b) What are the new equilibrium price and the new equilibrium quantity for commodity X?
(c) According chapter 1 how could interferences with the operation of the market mechanism prevent the attainment of equilibrium?

4. Suppose that from the condition of equilibrium in Problem 1, the government decides to grant a subsidy of $1 on each unit of commodity X produced to each of the 1,000 identical producers of commodity X.

(a) What effect does this have on the equilibrium price and quantity of commodity X?
(b) Do consumers of commodity X reap any benefit from this?

5. Suppose that from the equilibrium condition in Problem 1, the government decides to collect a sales tax of $2 per unit sold, from each of the 1,000 identical sellers of commodity X.

(a) What effect does this have on the equilibrium price and quantity of commodity X?
(b) Who actually pays the tax?
(c) What is the total amount or taxes collected by the government?