

the social demand curve for both drugs and label the social loss in each case. 10

c Explain intuitively why, all else equal, social loss is greater in the case of elastic demand than it is in the case of inelastic demand.

13 **Secondhand smoke I.** Assume that the daily demand for packs of cigarettes in the tobacco-addicted nation of Pcoria is

$$Q = 100 - P$$

Further assume that the marginal cost of producing a pack of cigarettes is \$6, and that the market for cigarettes is perfectly competitive. Assume that each pack of cigarettes smoked does \$6 worth of health damage to the smoker in the form of increased cancer risk and a total of \$5 worth of health damage to the smoker's neighbors via secondhand smoke. Finally, assume that all Pcorian cigarette consumers are aware of these costs.

a Assume that a Pcorian smoker named Jay states that he is willing to buy a pack of cigarettes for \$8, but not a penny more. In this market, where the price is \$6 per pack, what are the private benefits and private costs incurred whenever he buys a pack of cigarettes? Is it privately efficient for him to buy a pack of cigarettes at this price?

b What about the public benefits and public costs? Is it socially efficient for him to buy a pack of cigarettes at this price?

c Suppose that, due to the introduction of a hyper-effective tobacco fertilizer, the cost of producing a pack of cigarettes plummets to \$1. Now is it socially efficient for Jay to purchase a pack of cigarettes?

4 **Secondhand smoke II.** Review the assumptions from the previous problem, and assume that it still costs \$6 to produce a pack of cigarettes.

a Draw the private supply curve and the private demand curve in this market. What is the privately efficient quantity of packs purchased per day?

b Draw the public supply curve in this market. Explain.