

## 2013 AP<sup>®</sup> MICROECONOMICS FREE-RESPONSE QUESTIONS

- (c) Instead, assume the monopolist charges a single price and is regulated to produce the socially efficient quantity. Using the labeling of the graph, identify each of the following.
- (i) The socially efficient quantity
  - (ii) The consumer surplus at the socially efficient quantity
- (d) Is the monopolist facing the regulation in part (c) earning a positive economic profit, earning zero economic profit, or incurring a loss? Explain.
- (e) Is point f in the elastic, inelastic, or unit elastic portion of the demand curve? Explain.
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2. There are two pizza restaurants in College Town, PieCrust and LaPizza. Each company must decide whether to advertise or to not advertise. In the payoff matrix below, the first entry in each cell indicates PieCrust's daily profit, and the second entry indicates LaPizza's daily profit. Both firms have complete information.

		LaPizza	
		Advertise	Not Advertise
PieCrust	Advertise	\$250, \$200	\$450, \$300
	Not Advertise	\$180, \$500	\$390, \$400

- (a) What strategy should PieCrust choose if LaPizza chooses to advertise? Explain using the dollar values in the payoff matrix.
- (b) What is the dominant strategy, if any, for LaPizza? Explain using the dollar values in the payoff matrix.
- (c) In the Nash equilibrium, determine each of the following.
- (i) PieCrust's daily profit
  - (ii) LaPizza's daily profit
- (d) Suppose that advertising costs increase by \$60 per day. Redraw the payoff matrix to reflect the effect of the higher advertising costs.

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3. For special occasions some people purchase and set off fireworks in their backyards. Assume the market for fireworks is perfectly competitive.
- (a) Draw a correctly labeled graph of the market for fireworks and show the market equilibrium price and quantity, labeled  $P_E$  and  $Q_E$ .
  - (b) Assume that the noise from the fireworks disturbs all of the neighbors. On your graph in part (a), show each of the following.
    - (i) The marginal social cost curve, labeled MSC
    - (ii) The marginal social benefit curve, labeled MSB
    - (iii) The deadweight loss, if any, shaded completely
  - (c) Now instead assume that all of the neighbors enjoy watching the fireworks.
    - (i) In this case, is the market equilibrium quantity of fireworks greater than, less than, or equal to the socially optimal quantity? Explain.
    - (ii) In this case, if the government bans fireworks, will the deadweight loss increase, decrease, or remain unchanged?

**STOP**

**END OF EXAM**

**AP<sup>®</sup> MICROECONOMICS**  
**2013 SCORING GUIDELINES**

**Question 2**

**5 points** (1 + 2 + 1 + 1)

(a) 1 point:

- One point is earned for stating that PieCrust should choose to advertise because it makes greater profit by advertising:  $\$250 > \$180$ .

(b) 2 points:

- One point is earned for stating that LaPizza does not have a dominant strategy.
- One point is earned for stating that its best choice depends on the strategy chosen by PieCrust. When PieCrust advertises, LaPizza does better by not advertising ( $\$300 > \$200$ ); When PieCrust does not advertise, LaPizza does better by advertising ( $\$500 > \$400$ ).

(c) 1 point:

- One point is earned for identifying the daily profit for PieCrust, \$450, and for LaPizza, \$300.

(d) 1 point:

- One point is earned for reproducing the payoff matrix to reflect the effect of the increase in advertising costs.

		LaPizza	
		Advertise	Not Advertise
PieCrust	Advertise	\$190, \$140	\$390, \$300
	Not Advertise	\$180, \$440	\$390, \$400