

OBJECTIVES

- Objectives
 - Explain how managers use price discrimination to increase profits
 - Identify submarkets with different price elasticities of demand
 - Segment the market and charge different prices to consumers in each submarket

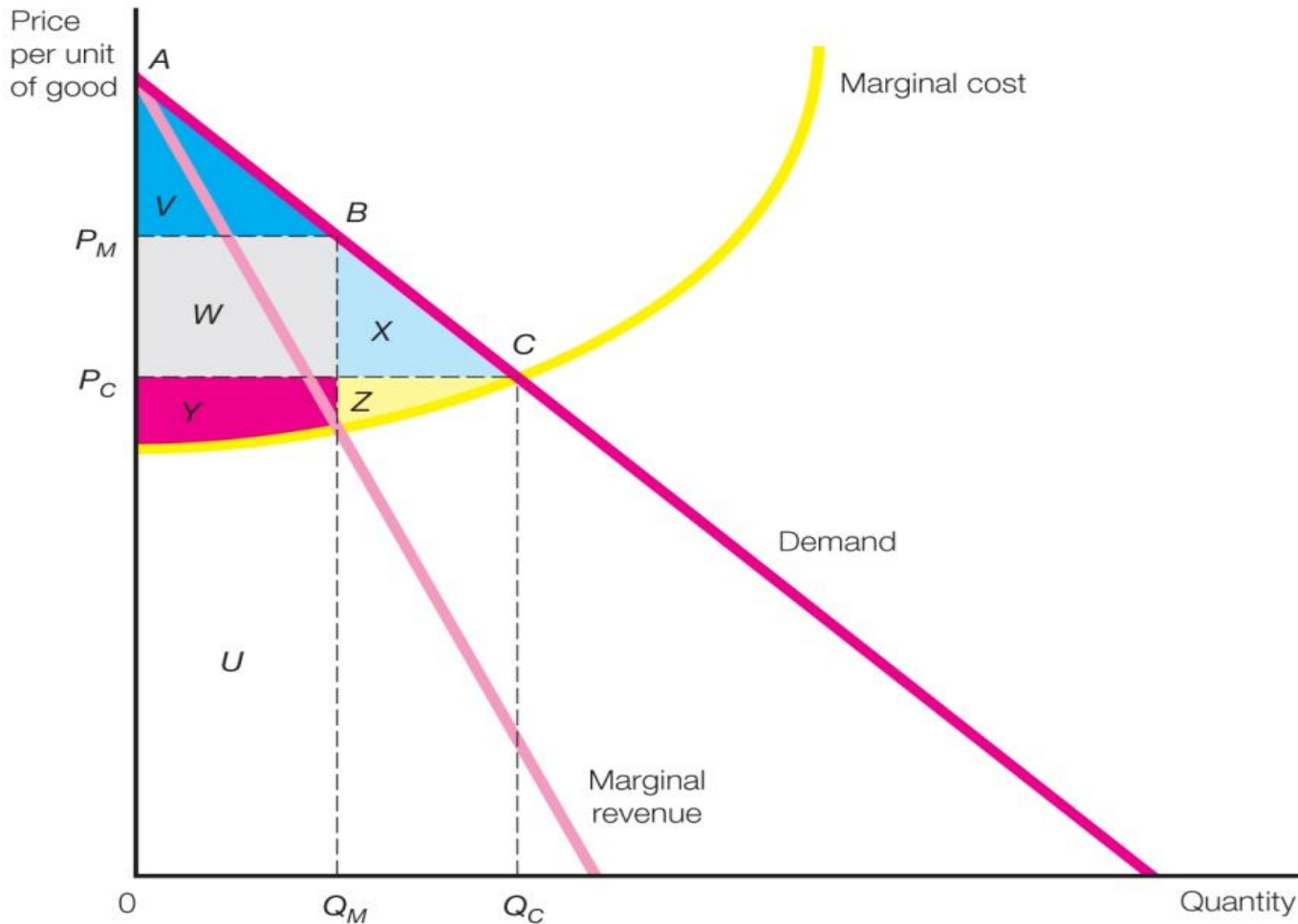
MOTIVATION FOR PRICE DISCRIMINATION

- **Figure 9.1: Single-Price Monopolist Profit-Maximizing Outcome**
 - Single-price monopoly equilibrium fails to capture all consumer surplus and also results in a dead-weight loss.
 - Price discrimination provides a strategic mechanism for capturing some, or all, of this lost surplus.

SINGLE-PRICE MONOPOLIST PROFIT-MAXIMIZING OUTCOME

FIGURE 9.1

Single-Price Monopolist Profit-Maximizing Outcome



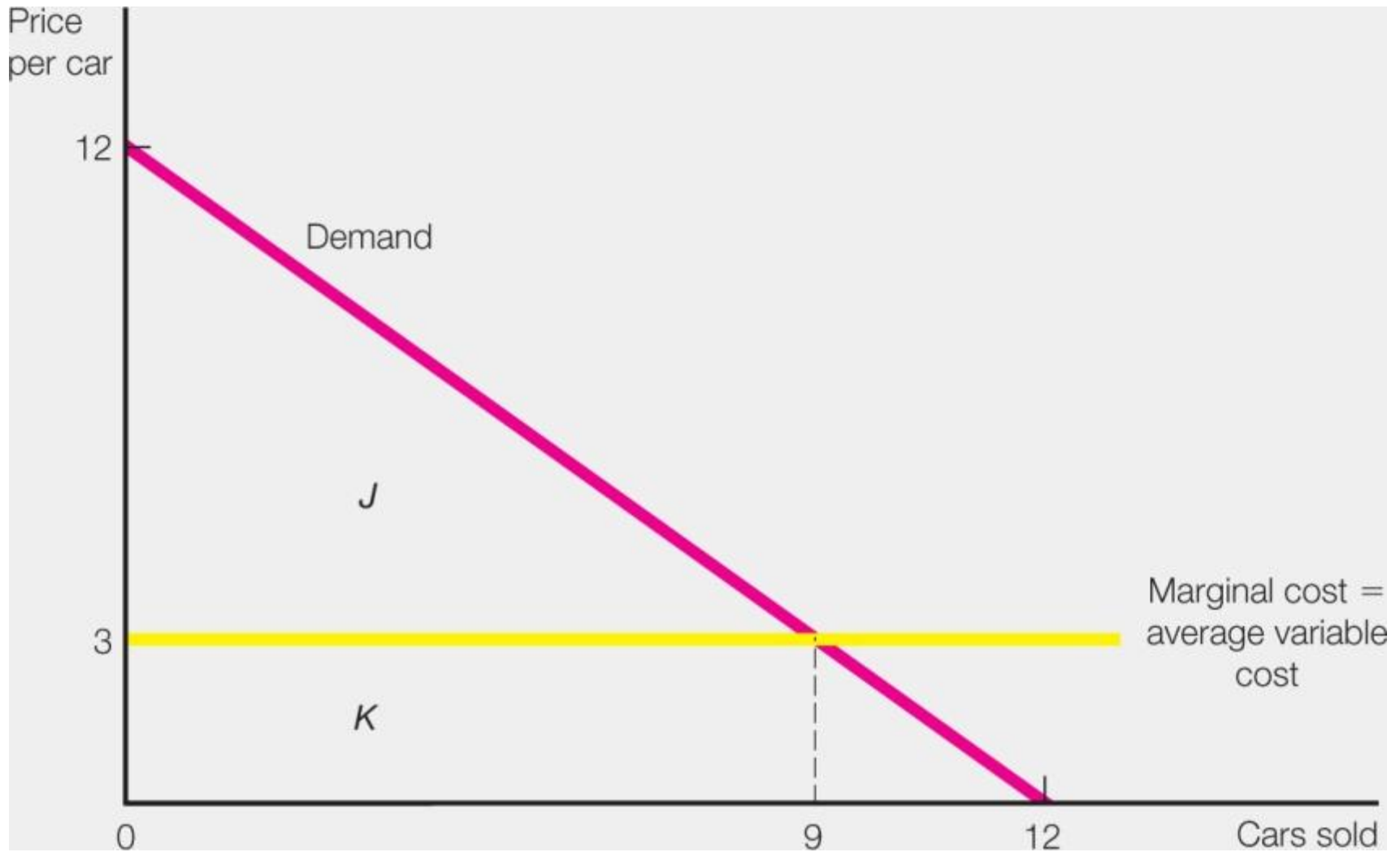
PRICE DISCRIMINATION

- Price discrimination: When the same product is sold at more than one price
 - Differences in price among similar products are not evidence of price discrimination unless these price differences are not based on cost differences.

PRICE DISCRIMINATION

- **First-Degree Price Discrimination**
 - All customers are charged a price equal to their reservation price.
 - The firm captures 100% of the consumer surplus.
 - Equilibrium output and marginal cost are the same as under perfect competition.
 - There is no dead-weight loss.
 - Requires that firms have a relatively small number of buyers and that they are able to estimate buyers' reservations prices
 - May be operationalized by means of a two-part tariff

FIRST-DEGREE PRICE DISCRIMINATION



Discrimination through price schedules
2nd degree price discrimination

Quantity discounts:

- minimum purchase requirements
- cover charge
- tie-in sale

All make it so customers separate themselves according to willingness to pay.

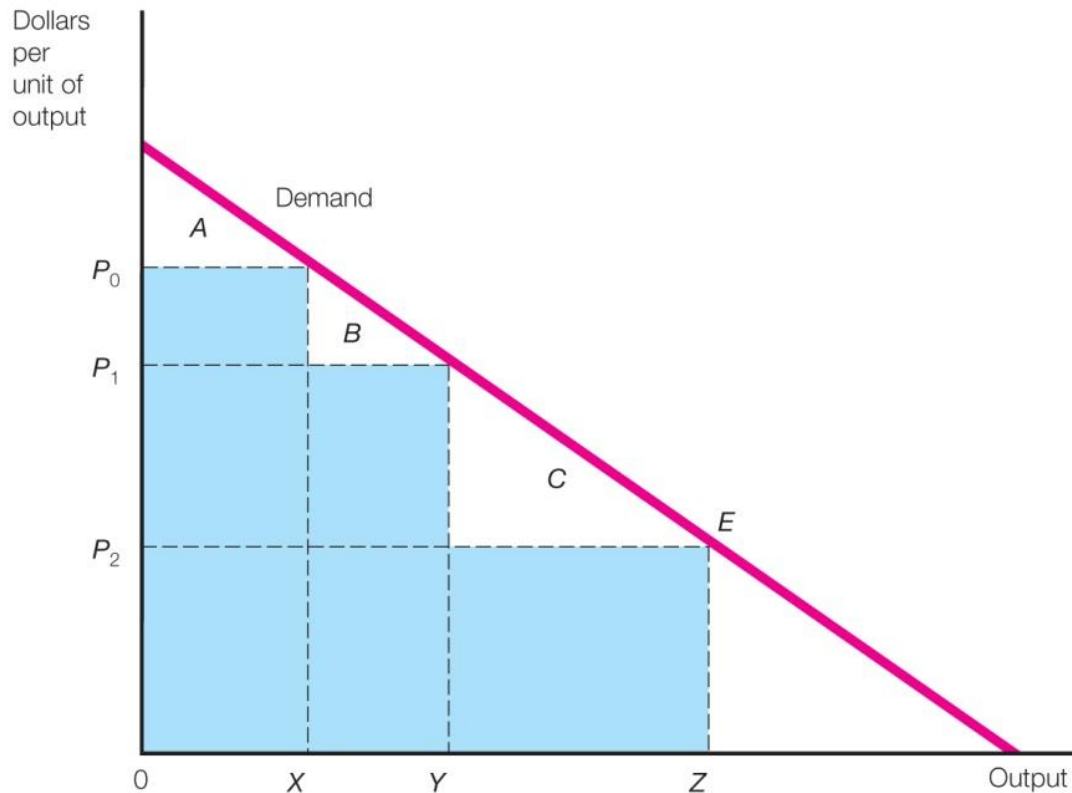
PRICE DISCRIMINATION

- **Second-Degree Price Discrimination**
 - Most commonly used by utilities (gas, electric, water, etc.).
 - Different prices are charged for different quantities of a good.
 - Figure 9.2: Second-Degree Price Discrimination
- **Third-Degree Price Discrimination**
 - Most common form of price discrimination

SECOND-DEGREE PRICE DISCRIMINATION

FIGURE 9.2

Second-Degree Price Discrimination



Market separation (3rd degree P.D)
Separate Customers into Different markets.

Max. Profit:

$$P_i \left(1 + \frac{1}{e_i}\right) = P_j \left(1 + \frac{1}{e_j}\right) = MC$$

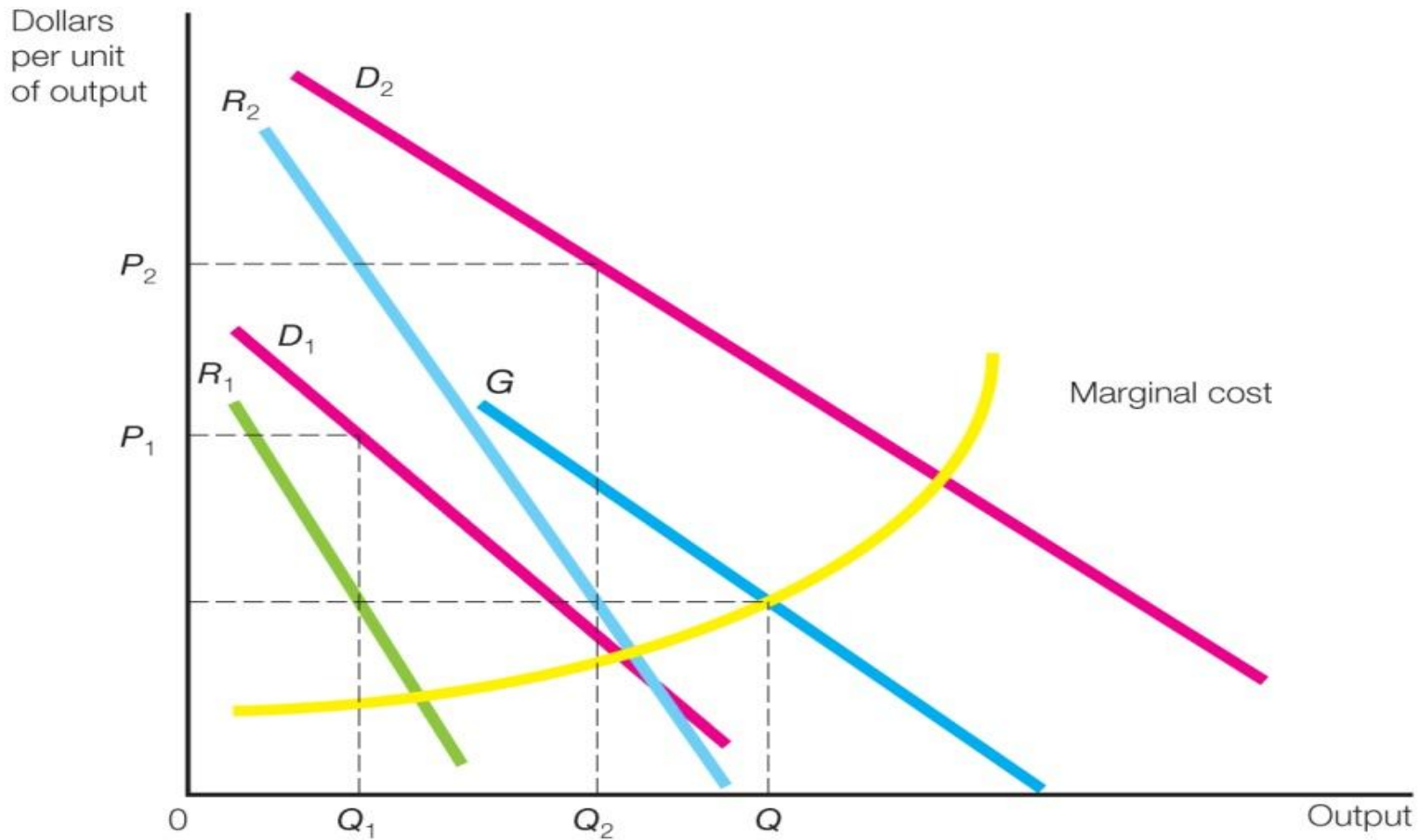
\Rightarrow

$$\frac{P_i}{P_j} = \frac{\left(1 + \frac{1}{e_j}\right)}{\left(1 + \frac{1}{e_i}\right)}$$

THIRD-DEGREE PRICE DISCRIMINATION

FIGURE 9.3

Third-Degree Price Discrimination



PRICE DISCRIMINATION

- Conditions
 - Demand must be heterogeneous; that is, different demand segments must have different price elasticities of demand.
 - Managers must be able to identify and segregate the different segments.
 - Markets must be successfully sealed so that customers in one segment cannot transfer the goods to another segment.

PRICE DISCRIMINATION

- **Example: Students**
 - Limited income makes students more responsive to price differences.
 - Students' price elasticity of demand is thus likely to be more elastic than that of other segments.
 - Students can be readily identified by their student IDs, aiding in segmentation.

PRICE DISCRIMINATION

- Other conditions
 - Segments must differ significantly in their price elasticities.
 - Managers must be able to identify and target the segments at moderate cost.
 - Buyers must be unable to transfer a product from one segment to another.
 - These two conditions are referred to as the ability to “segment and seal” the market.

PRICE DISCRIMINATION

- Optimal strategy

- Allocate total output so that marginal revenue in all segments is equal to the firm's marginal cost.

- Optimal price ratios

$$\frac{P_1}{P_2} = \left[\frac{1 - \left(\frac{1}{|\eta_2|} \right)}{1 - \left(\frac{1}{|\eta_1|} \right)} \right]$$

- Segments with relatively elastic demand are charged a lower price, and vice versa.

USING COUPONS AND REBATES FOR PRICE DISCRIMINATION

- Coupons and rebates are used to segment a market.
 - People who use coupons or send in rebates are likely to have more elastic demand than those who do not.
 - Coupons and rebates lead people to self-select their market segment.

USING COUPONS AND REBATES FOR PRICE DISCRIMINATION

- Pricing strategy
 - $P(1 - 1/|\eta_R|) = (P - X)(1 - 1/|\eta_S|) = MC$
 - P = market price
 - X = discount from coupon or rebate
 - η_R = price elasticity of demand by those who don't use coupons or rebates
 - η_S = price elasticity of demand by those who do use coupons or rebates

USING COUPONS AND REBATES FOR PRICE DISCRIMINATION

- Example: Barnegat Light Fish Company prices crab cakes
 - $MC = 2$
 - $\eta_R = -2$
 - $MR = MC \Rightarrow P = 4$
 - $\eta_S = -5$
 - $MR = (4 - X)[1 - (1/|-5|)] = 2 = MC \Rightarrow X = 1.5$

PEAK LOAD PRICING

- Issues in pricing strategy
 - The demand for some goods is time sensitive or seasonal.
 - Plant capacity is constant.

PEAK LOAD PRICING

- Issues in pricing strategy (cont'd)
 - Examples
 - Electricity generation
 - Roadways
 - Resort and hotel rooms
 - Intertemporal pricing of intellectual property: early release charges peak pricing and later release charges trough pricing; books released first as hard-bound with higher price followed by paperback at a lower price; leaders and followers in markets

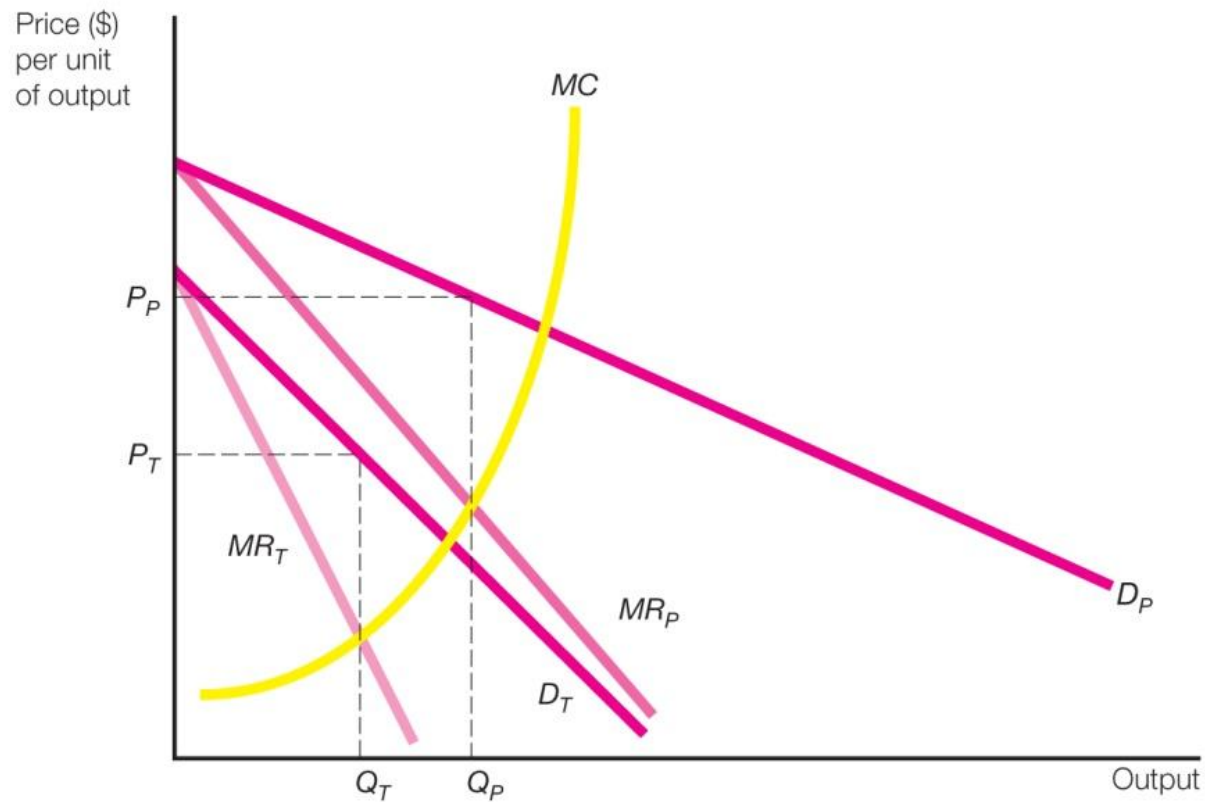
PEAK LOAD PRICING

- Strategic response
 - During peak time periods, when demand is high, managers should charge a higher price (P_P).
 - During trough time periods, when demand is low, managers should charge a lower price (P_T).
 - Marginal cost often follows a cyclical pattern in which MC is high during peak periods and low during trough time periods.
 - Firms should equate marginal cost and marginal revenue separately in the two time periods to determine the appropriate prices.

DETERMINATION OF PEAK AND TROUGH PRICES

FIGURE 9.4

Determination of Peak and Trough Prices



TWO-PART TARIFFS

- Two-part tariff
 - When managers set prices so that consumers pay an entry fee and then a use fee for each unit of the product they consume

TWO-PART TARIFFS

- **Examples**
 - Clubs (golf, health, discount, etc.) that charge a membership fee and a per-use fee
 - Wireless phone plans that charge a fixed fee and then additional fees per minute
 - Personal seat licenses (PSL) for sports stadiums—a fixed cost that gives the purchaser the right to buy tickets to games

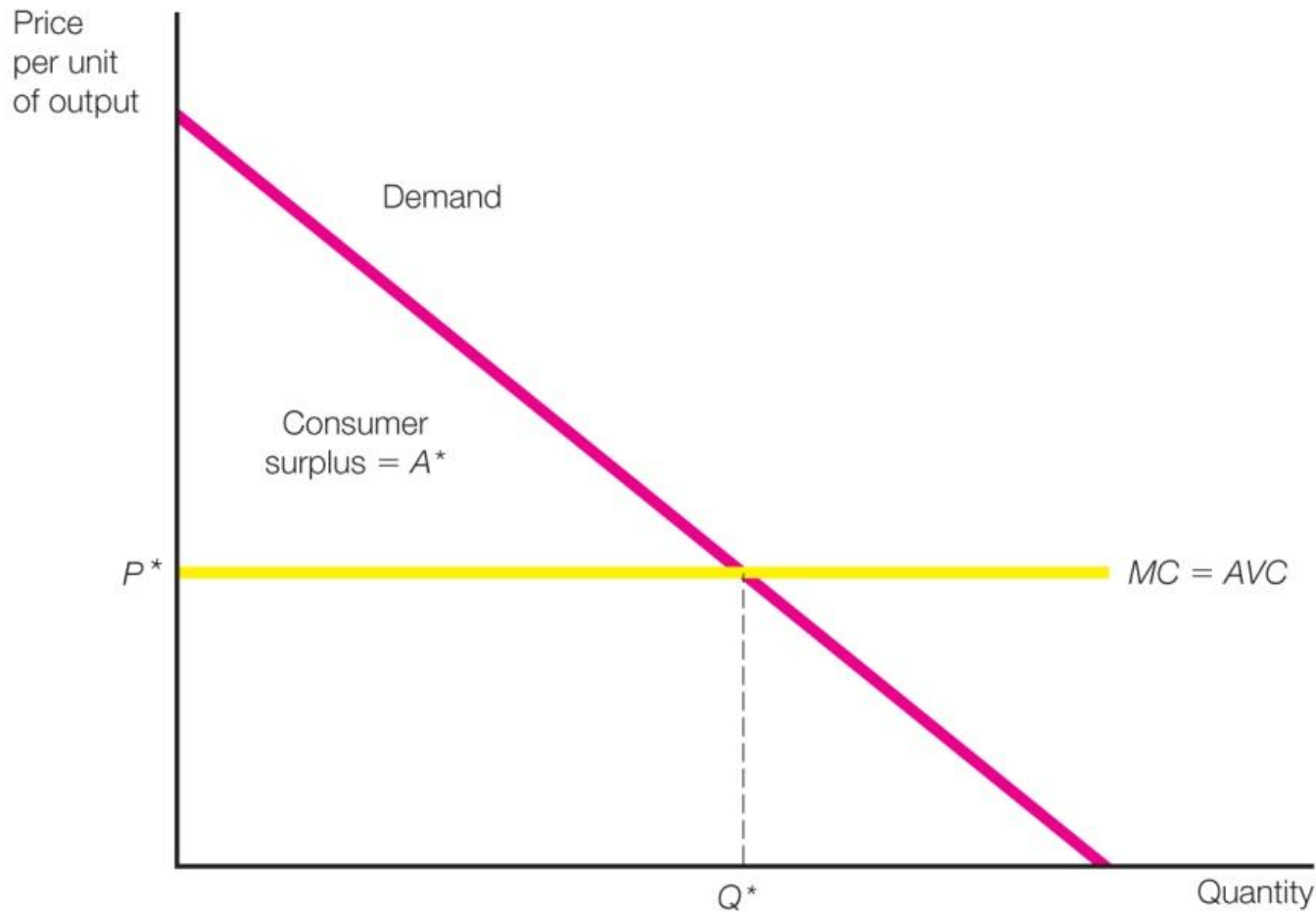
TWO-PART TARIFFS

- Strategy when all demanders are the same
 - Model
 - Assume that all consumers have the same preferences, defined by the demand curve $P = a - bQ$.
 - Assume that the firm's marginal cost is constant.
 - Entry fee is equal to consumer surplus.
 - Use fee is equal to marginal cost.
 - Total revenue is the same as under first-

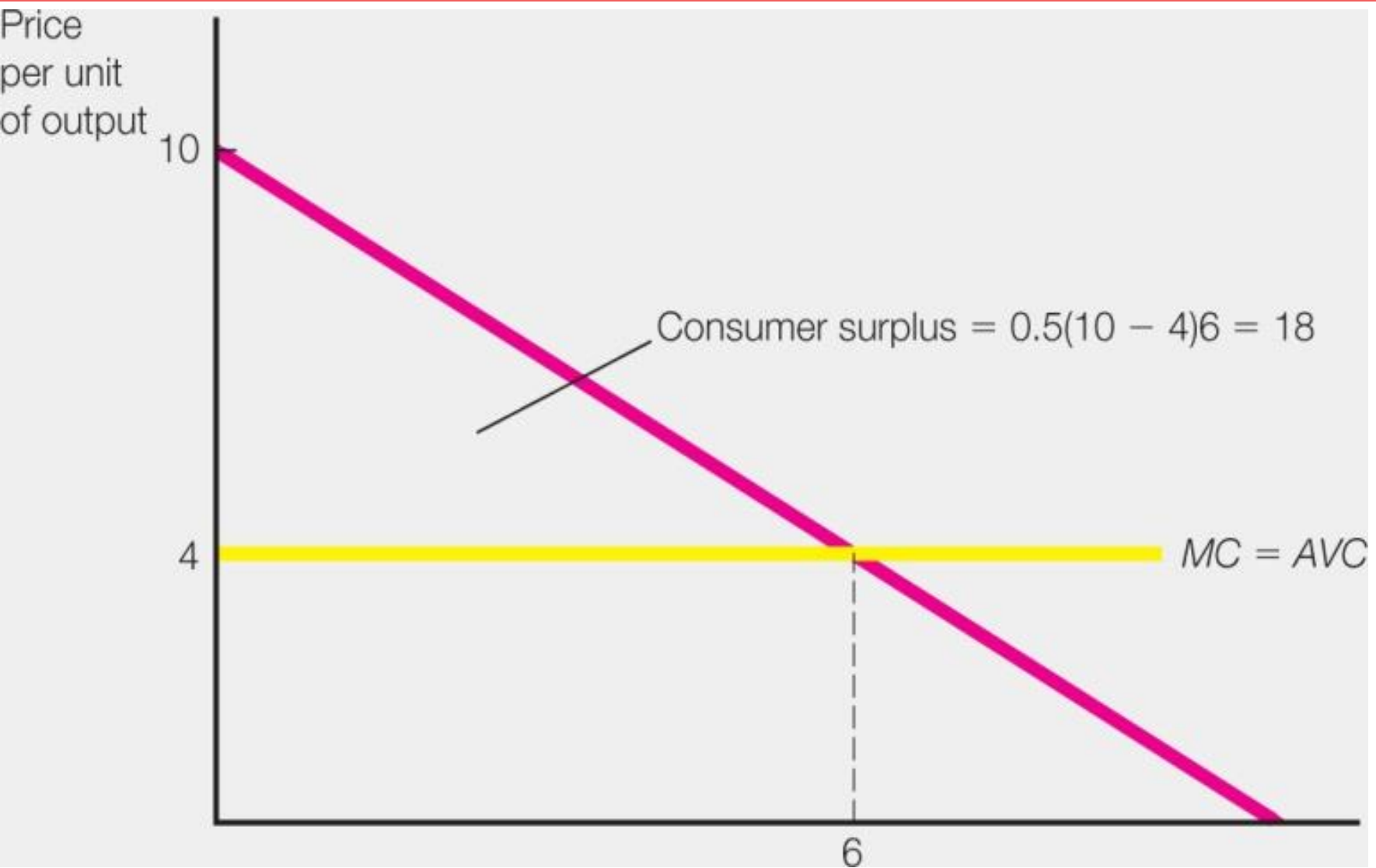
OPTIMAL TWO-PART TARIFF WHEN ALL DEMANDERS ARE THE SAME

FIGURE 9.5

Optimal Two-Part Tariff When All Demanders Are the Same



A TWO-PART TARIFF EXAMPLE: C-PAL INDUSTRIES



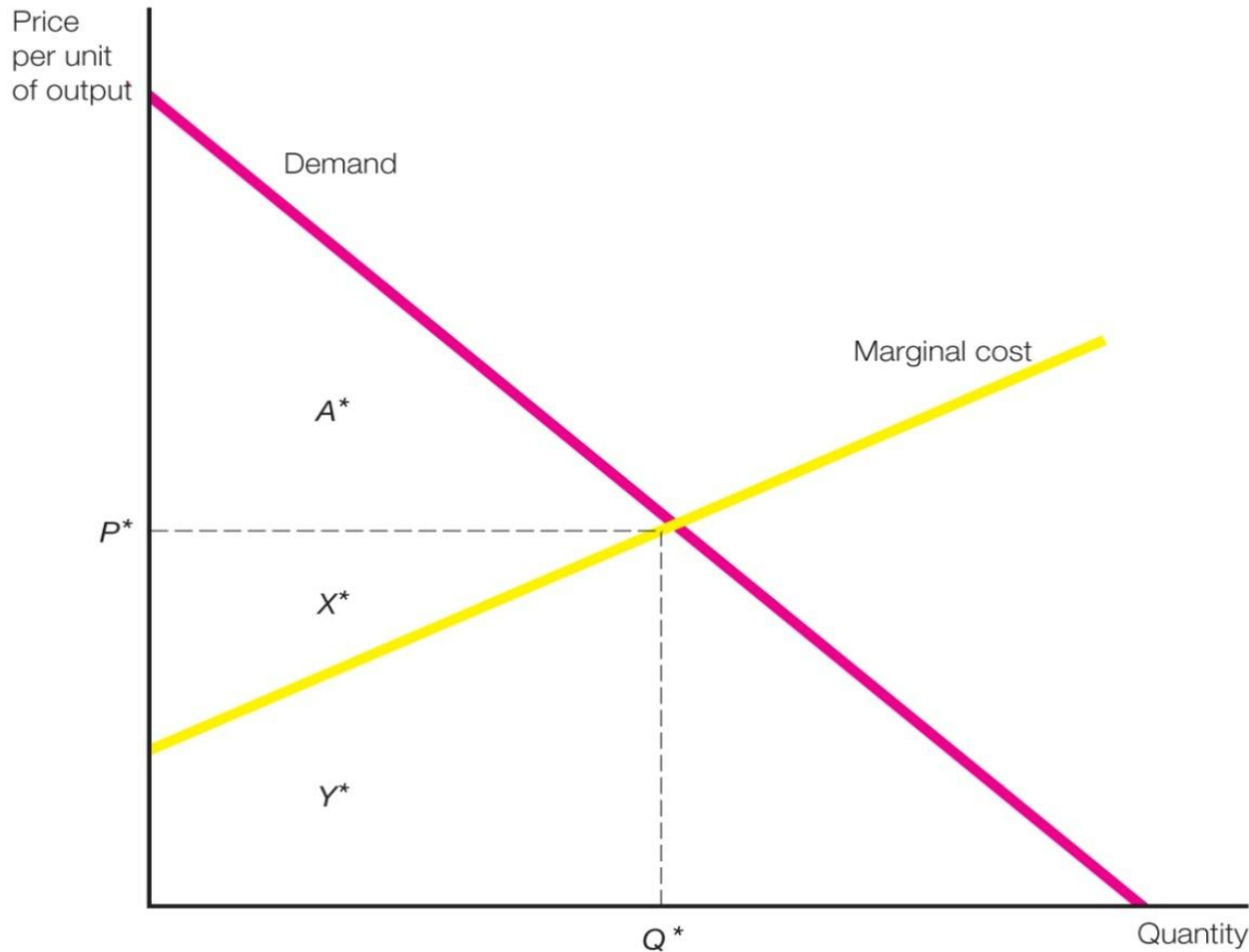
TWO-PART TARIFFS

- Two-Part Tariff with a Rising Marginal Cost
 - Strategy is the same as when marginal cost is constant.
 - Variable-cost profit is positive when marginal cost has a positive slope.
 - Figure 9.6: Optimal Two-Part Tariff When Marginal Cost Is Rising
- Two-Part Tariff with Different Demand Curves
 - Model
 - Market consists of strong demanders and weak demanders

OPTIMAL TWO-PART TARIFF WHEN MARGINAL COST IS RISING

FIGURE 9.6

Optimal Two-Part Tariff When Marginal Cost Is Rising



TWO-PART TARIFFS

- Pricing strategies
 - When strong demand is much stronger than weak demand: Set use fee equal to marginal cost and entry fee equal to the strong demanders' consumer surplus. Weak demanders will be excluded from the market.
 - When strong demand is not much stronger than weak demand: Set use fee equal to marginal cost and entry fee equal to the weak demanders' consumer surplus. Weak demanders will not be excluded from the market.

TWO-PART TARIFFS

- Pricing strategies (cont'd)
 - When strong demand is not much stronger than weak demand: Set use above marginal cost at a price that maximizes variable-cost profit and entry fee equal to the weak demanders' consumer surplus. Weak demanders will not be excluded from the market.
 - Optimal strategy when strong demand is not much stronger than weak demand is found by comparing total average cost profit from the two strategies.

OPTIMAL TWO-PART TARIFF WITH TWO DEMAND TYPES

FIGURE 9.7

Optimal Two-Part Tariff with Two Demand Types

