Monopoly I:

Introduction & Profit-maximization

BECO 3310 Fall 2025

Recap

Firms & the Market

- Profit-maximizing firms will behave differently depending on the extent of competition…
  - …some markets may have many competing firms…
  - …some markets may have only one firm producing a good…
  - …and there's a multitude of scenarios in between.

Firms & the Market

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  - …and there's a multitude of scenarios in between.

Monopoly Characteristics

ASSUMPTIONS:

- 1.One Seller/Firm of a good or service.
- 2.Price Makers (they set the price).
- 3.Possess Market Power due to price-making ability.
- 4.High Barriers to Entry (key feature of monopoly).

WHY MONOPOLIES ARISE

MARKET POWER:

- A firm’s ability to influence the market price of its product.
- This alters the relationship between a firm’s costs and selling price from the competitive market model.

$$MR = MC \neq P$$

Monopoly & Market Power

- Monopolies charge a price that exceeds marginal cost.
  - **P > MC**
- The higher price reduces the quantity that is purchased.
- The output is lower than the social optimum.
  - Less quantity being supplied than in competitive equilibrium.
- How do monopolies get market power?

BARRIERS TO ENTRY:

- Factors that prevent entry into an industry despite the allure of profits.
- The fundamental source of monopoly (& market) power!
- A monopoly will remain the sole seller so long as barriers to entry persist.

Types of Barriers to Entry:

- 1.Monopoly Resources
- 2.Government Regulation
- 3.Natural Monopoly (i.e., unique production process)
    - ***Other barriers to entry exist, but we will focus on these three.

MONOPOLY RESOURCES:

- When a key resource (or resources) required for production of a particular good is owned by a single firm.
- Other firms don’t have access to this resource and can’t enter the market, thus giving a monopoly market power.


A DIAMOND IS FOREVER

Ex: DeBeers Diamond Co.

- DeBeers is a famous South African diamond company.
- DeBeers had unique access to some of the worlds largest diamond mines.
- At times they controlled 80% of the worlds production of diamonds.
- Is DeBeers really a monopoly?
  - No. First, 80% is not 100%. Second, there are at least a few firms with relatively close substitutes.

Monopoly Resources in Reality

- **Very Rare**
  - Chances are other firms with close substitutes exist.
- Even if a firm has a completely unique resource for production, market conditions change over time.
  - Innovation & Technological Advancement
  - Long-Run Elasticity
  - Gains from Trade!

GOVERNMENT REGULATION:

- When the government gives a single firm the exclusive right to produce some good or service.
- Often leads to higher prices & higher profits for the firm.


INTELLECTUAL
PATENTED
PROPERTY

Ex: Copyright & Patent Laws

- A patent grants a firm/company the exclusive right to manufacture and sell a resource for a specified period of time.
  - Pharmaceutical Patents
  - Authors & Copyright Agreements
- Patents can increase the incentives for creative activity. But they are also costly (tradeoffs everywhere).
  - Rival drug companies can’t produce better, lower cost drugs which lead to (preventable) deaths.


United States
Post Office

Ex: U.S. Postal Service

- The U.S. Postal Service is a government created monopoly.
- Is it really a monopoly?
  - No. Other close substitutes exist (FedEx, UPS, Amazon)
  - The USPS has operated at a loss of billions of dollars each year. It exists because it is mandated to exist.


CITY OF CLEVELAND
water
AT YOUR SERVICE
City of
Lubbock
TEXAS
WATER DEPARTMENT
The City of
HILLSDALE
MICHIGAN
BPU
Board of Public Utilities

Ex: Water Distribution

- The Water Company
  - Providing water to town residents involves a high fixed cost of building pipe networks throughout the town.
  - ATC is, thus, lower when one firm does this since competing firms would also have to incur this cost if they joined the market.
- Natural Monopolies are less concerned with entry by other firms because they know other firms can’t produce at a lower ATC than themselves.

Natural vs. Artificial Monopoly

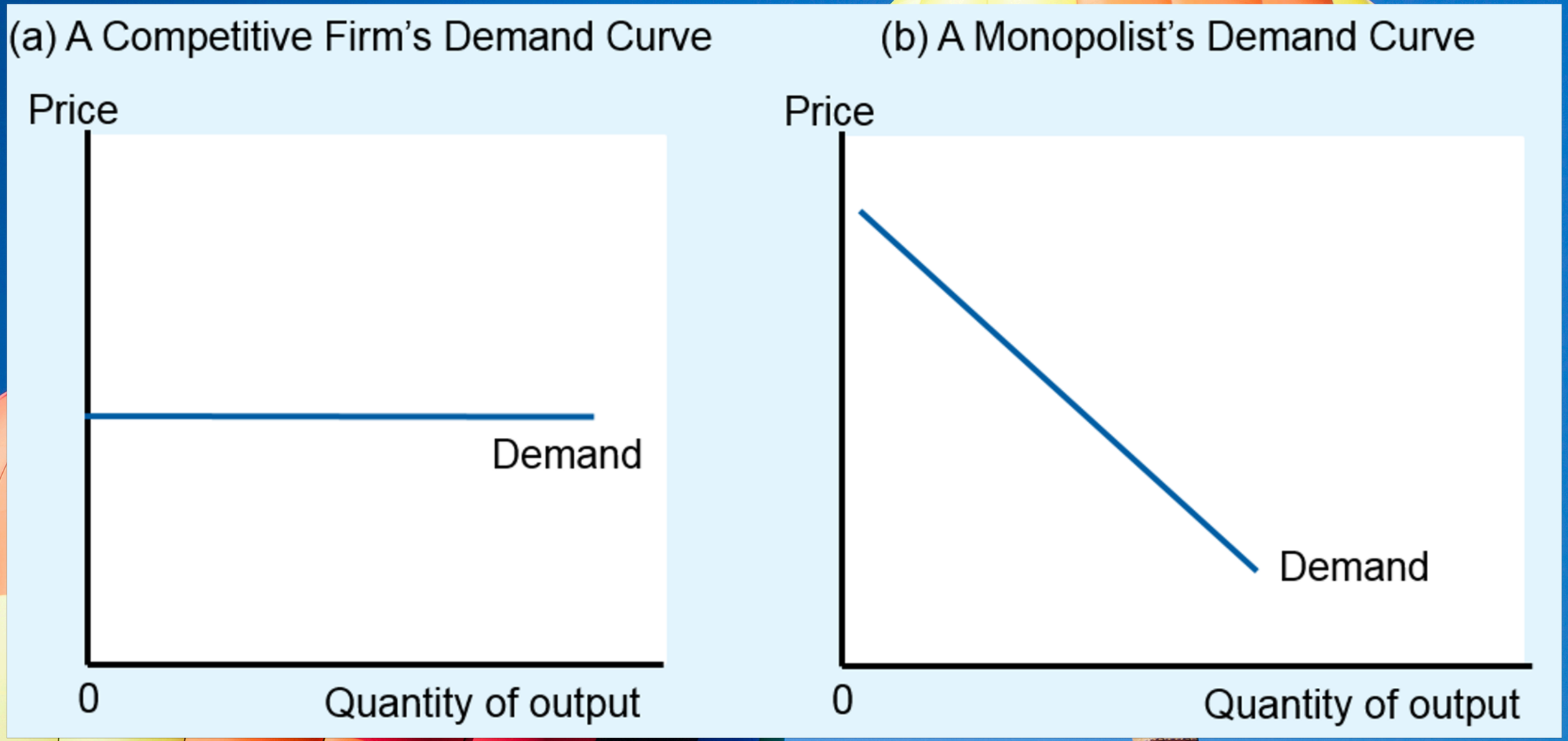
- Natural Monopolies don’t last forever!
  - Usually, as the market expands it becomes more competitive.
  - Ex: Bridge in a small town.


LAST
COVERED BRIDGE
This bridge was built by the Town of Cedarburg on petition of neighboring farmers to replace period-ically washed out bridges. Pine logs, cut and milled at Harrison, were fitted and set in place in lattice truss construction with 3 x 10 inch planks secured by 2 inch hardwood pins, eliminating the use of nails or bolts, and floored by 3 inch planking. The Ozaukee County Board in 1940 voted to assume the preservation and maintenance of this bridge.

Natural vs. Artificial Monopoly

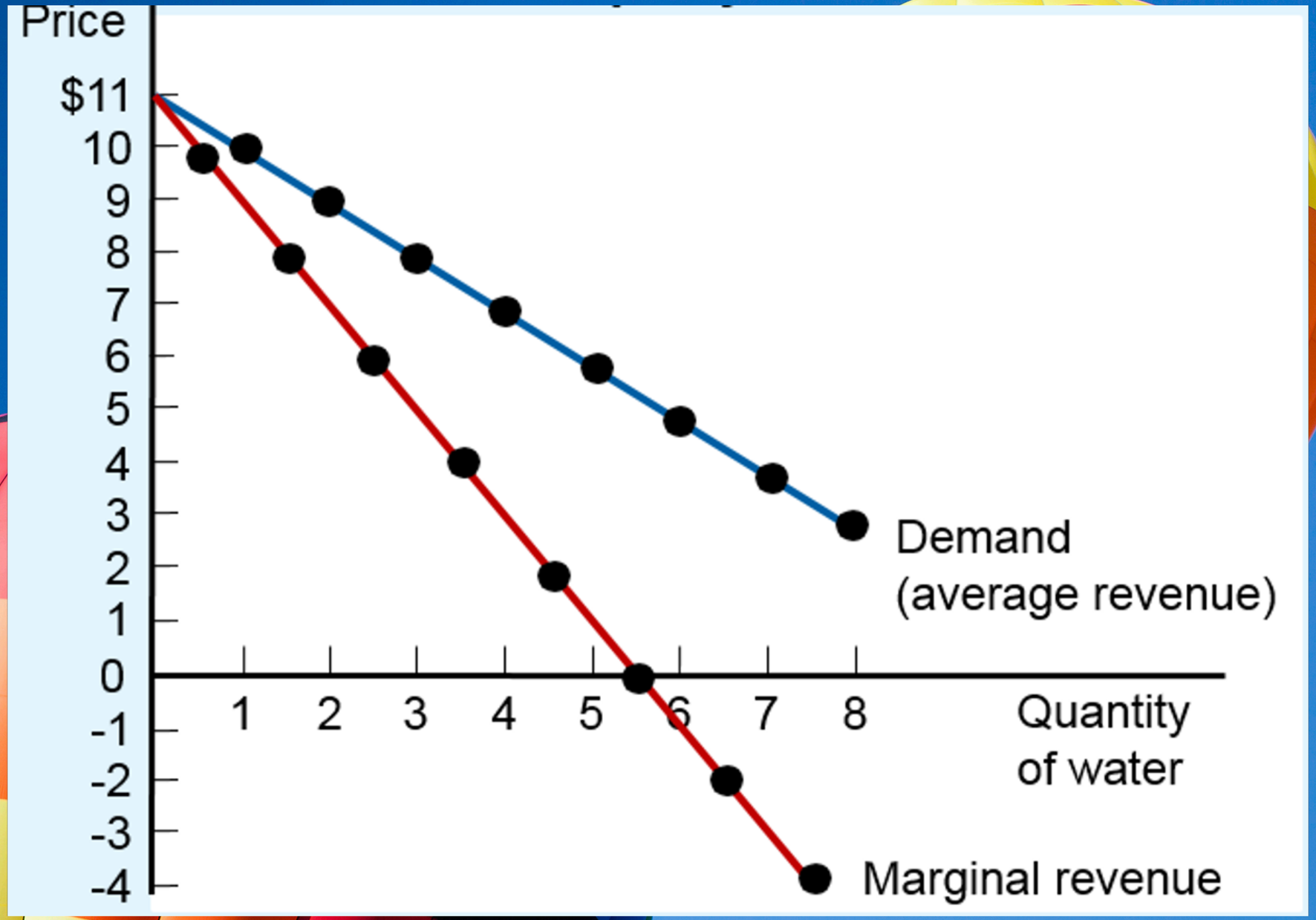
- Natural Monopolies don’t last forever!
  - Usually, as the market expands it becomes more competitive.
  - Ex: Bridge in a small town.
- When monopolies do persist, more often than not, it is artificial.
  - Ex: Government Protection
  - Artificial monopolies are monopolies that would otherwise be competitive in the absence of whatever artificial means allow them to keep their market power.

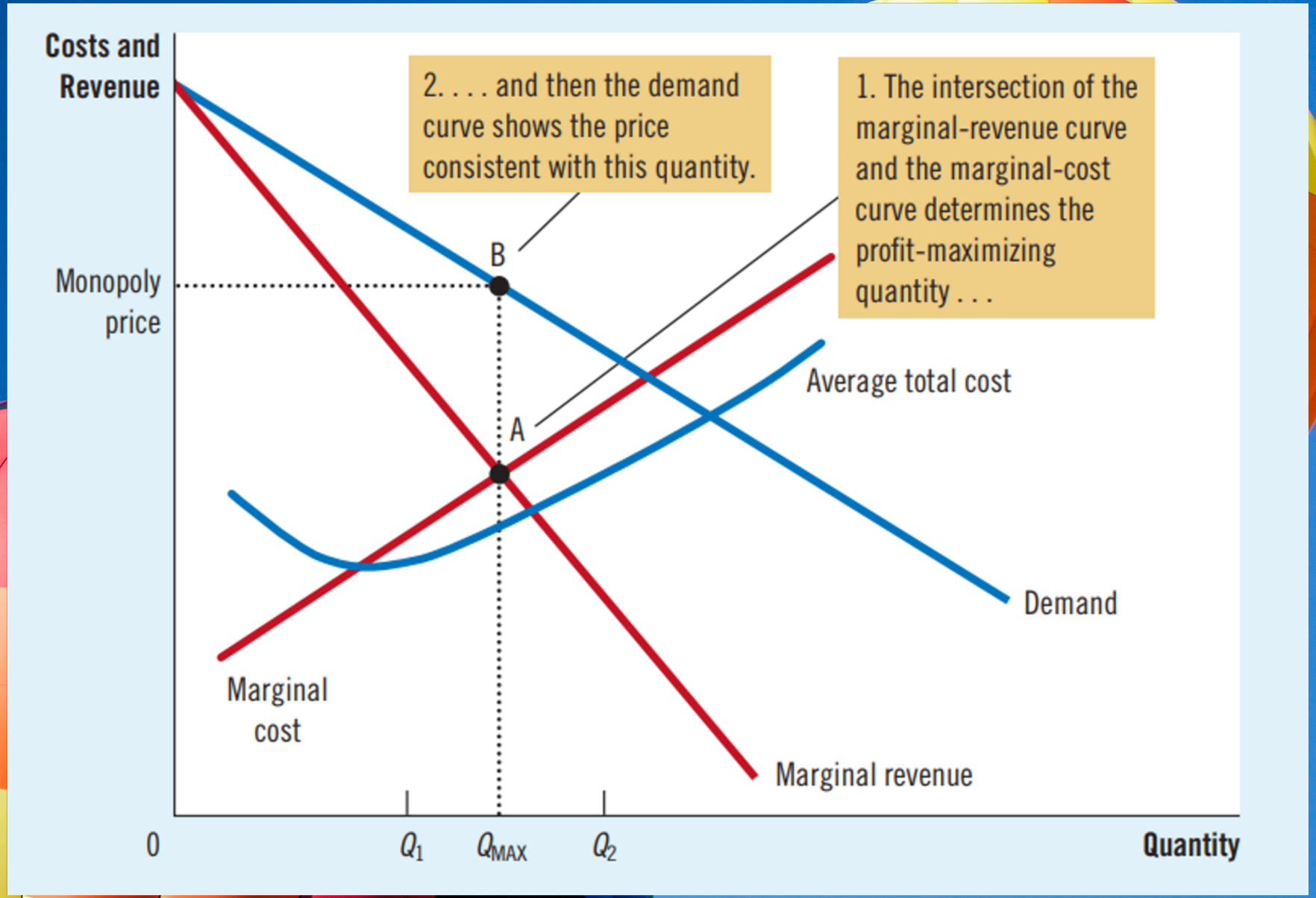
PROFIT-MAXIMIZATION
Monopoly Production and Pricing Decisions


(a) A Competitive Firm's Demand Curve
Price
Demand
0
Quantity of output
(b) A Monopolist's Demand Curve
Price
Demand
0
Quantity of output

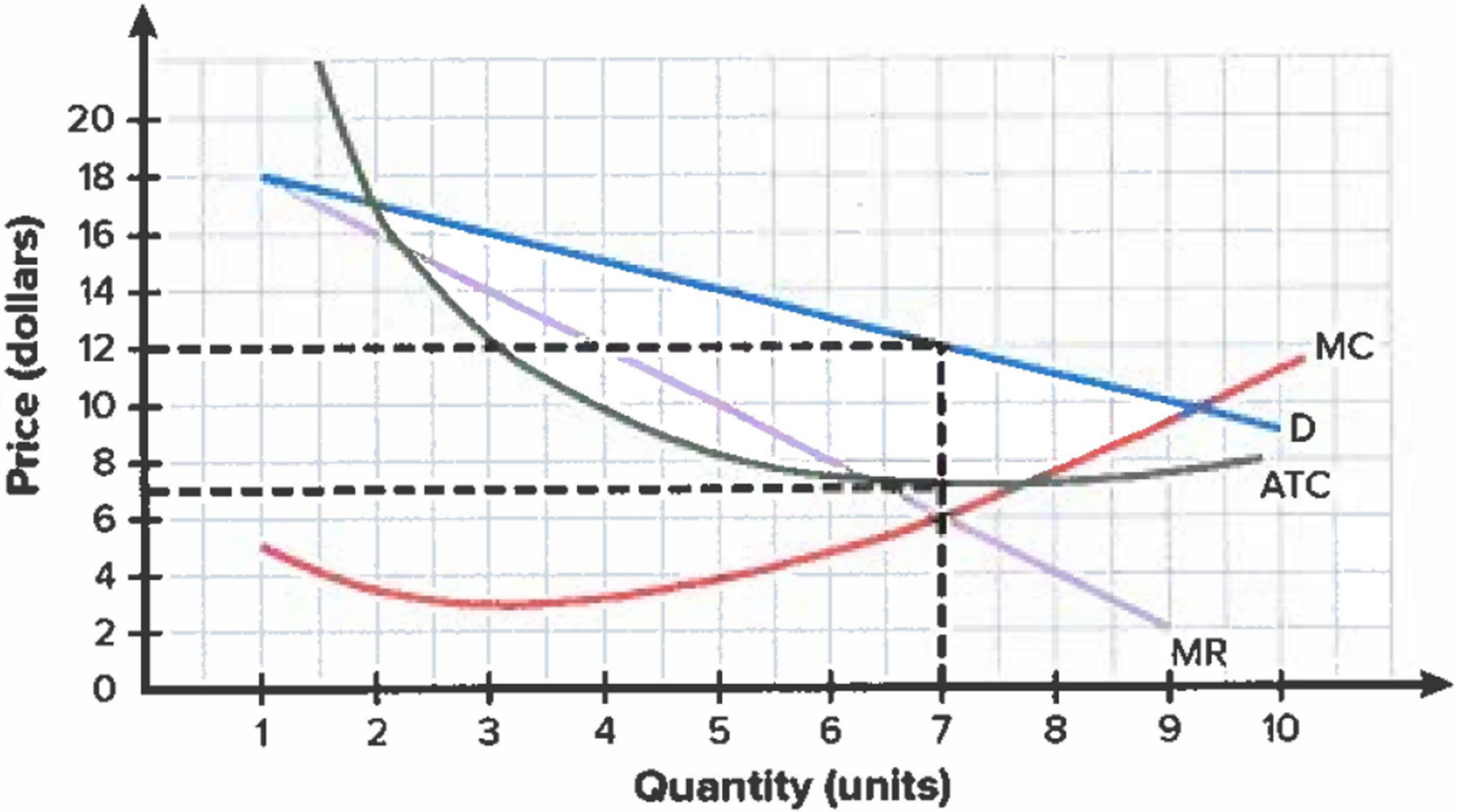
Production & Pricing Decisions

- Monopoly Total Revenue
  - **TR = P x Q**
  - However, now the TR for the firm is the TR for the whole industry.
- Monopoly Average Revenue
  - AR = TR/Q
  - Revenue per typical unit sold.
  - Always equal to price for a monopoly firm, P = AR.


Price
$11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
1
2
3
4
5
6
7
8
Demand
(average revenue)
Quantity
of water
Marginal revenue

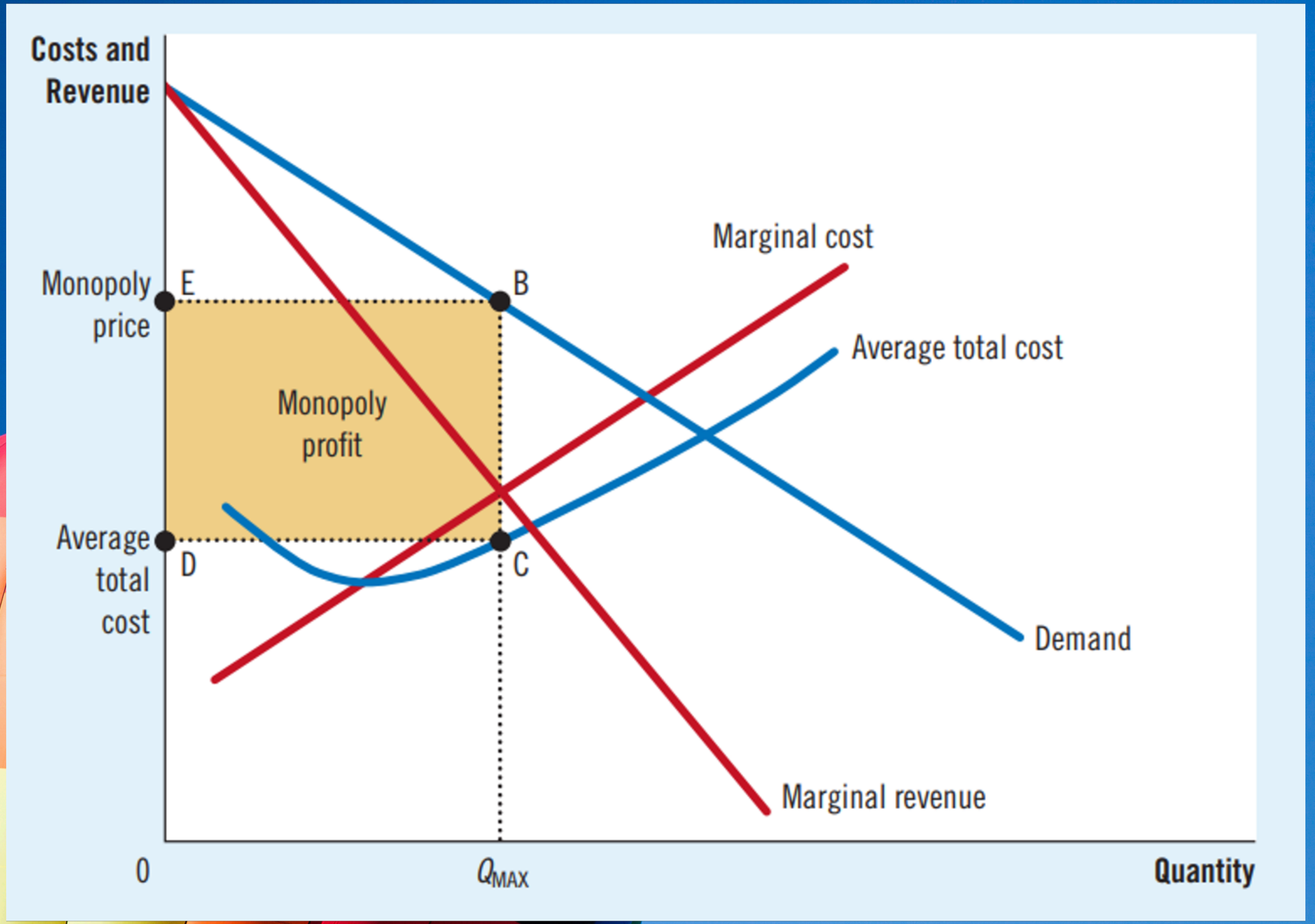

Costs and Revenue
2. . . . and then the demand curve shows the price consistent with this quantity.
1. The intersection of the marginal-revenue curve and the marginal-cost curve determines the profit-maximizing quantity . . .
B
Monopoly price
A
Average total cost
Demand
Marginal cost
Marginal revenue
0
Q_1
Q_{MAX}
Q_2
Quantity

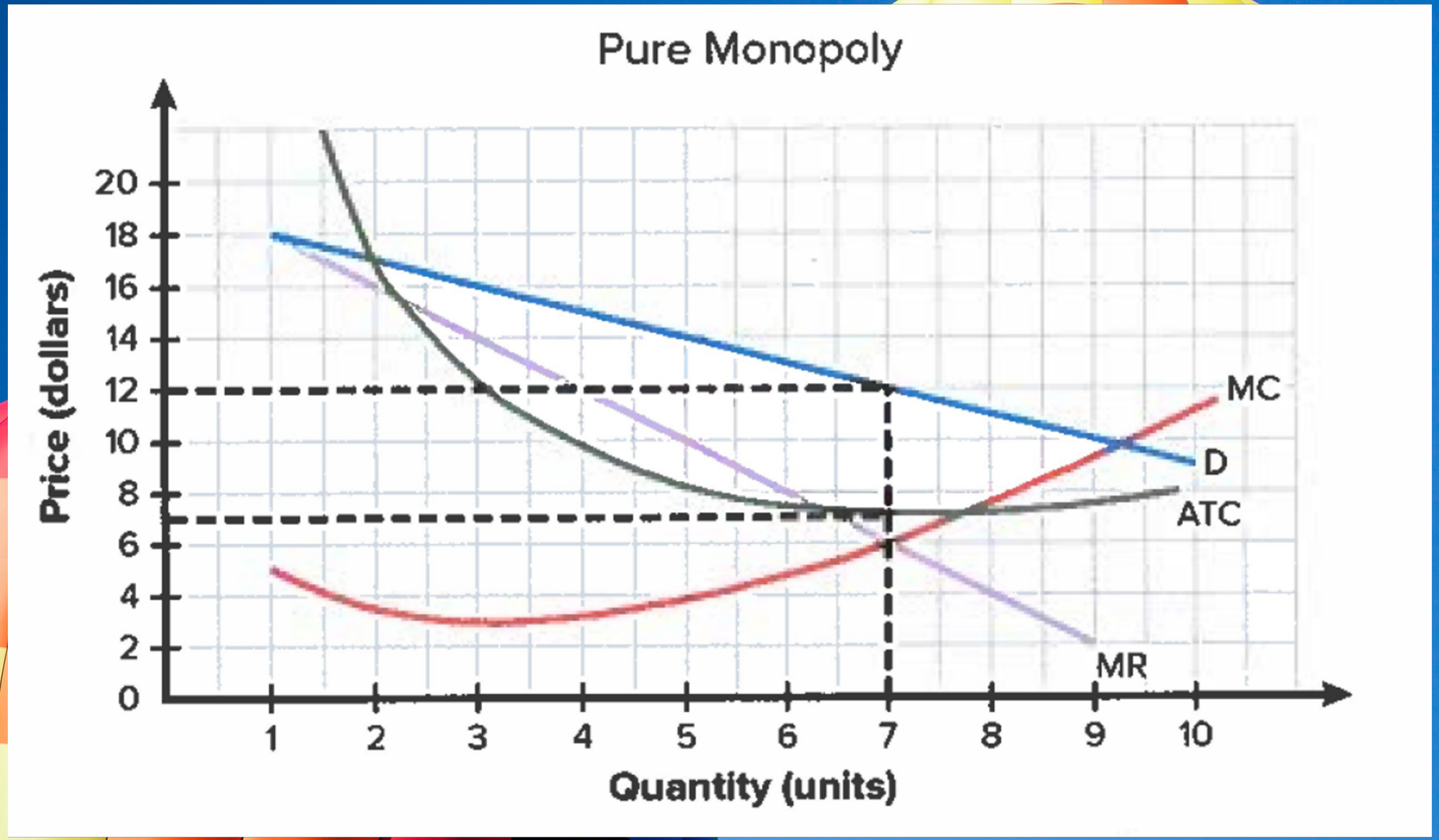
Pure Monopoly

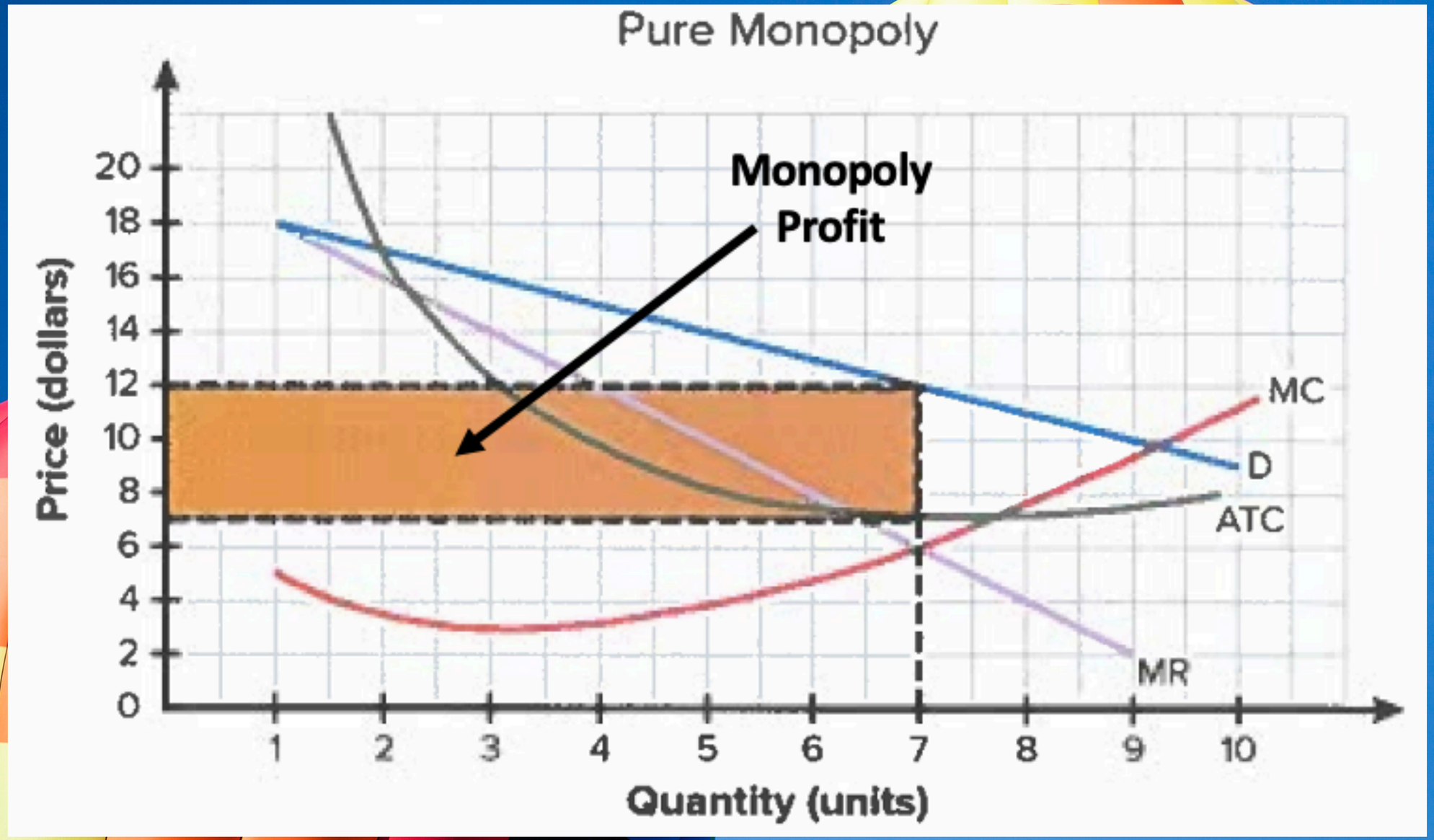


Production & Pricing Decisions

- Profit-Maximization
  - Competitive Firm, **P = MR = MC**
  - Monopoly Firm, **P > MR = MC**
- Monopoly Profit
  - Profit = TR – TC = **(P – ATC) x Q**


Costs and Revenue
Monopoly price
E
B
Marginal cost
Average total cost
Monopoly profit
Average total cost
D
C
Demand
Marginal revenue
0
Q_{MAX}
Quantity


Pure Monopoly
Price (dollars)
20
18
16
14
12
10
8
6
4
2
0
1
2
3
4
5
6
7
8
9
10
Quantity (units)
MC
D
ATC
MR


Pure Monopoly
Monopoly Profit
Price (dollars)
20
18
16
14
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7
8
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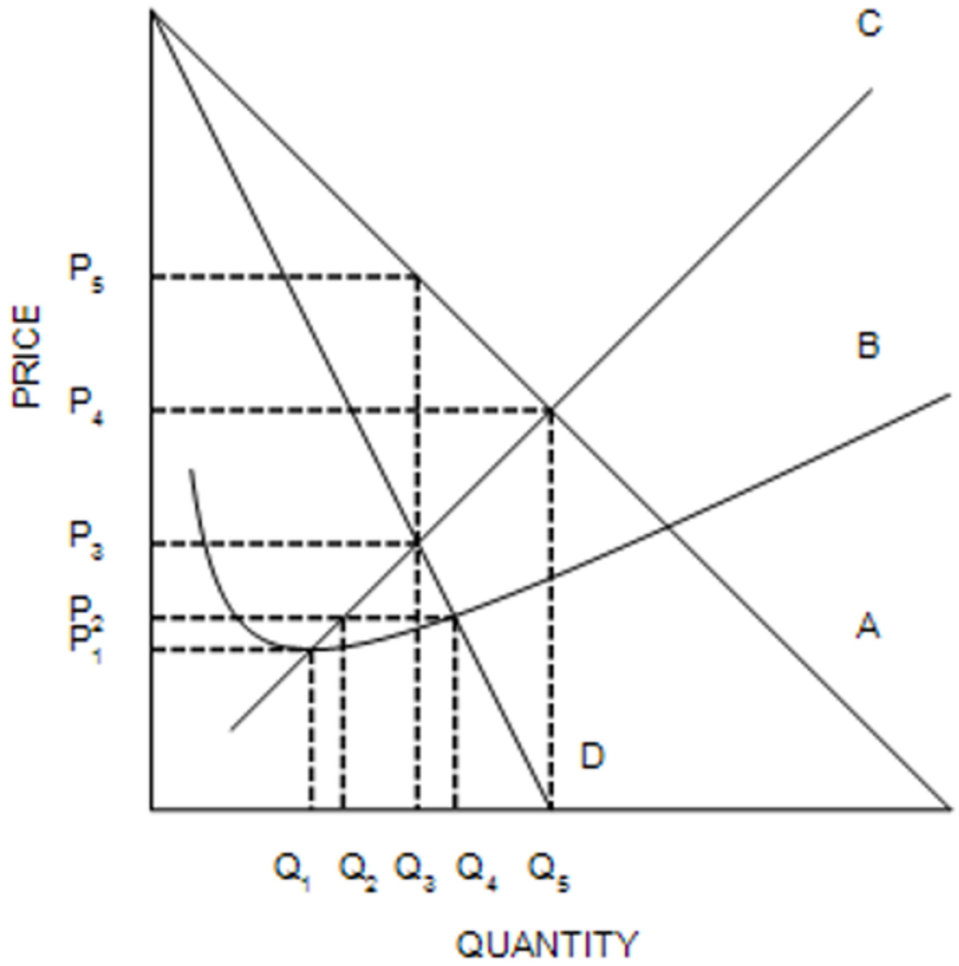
Quantity (units)
MC
D
ATC
MR

Practice



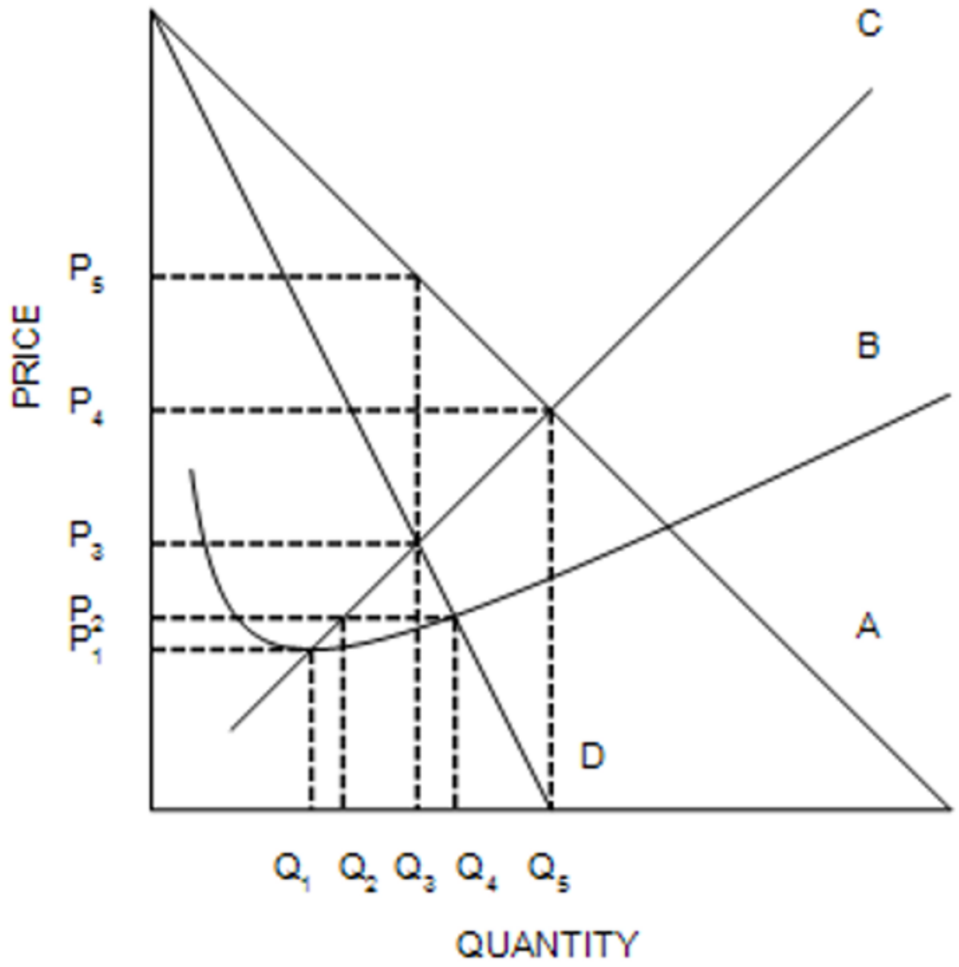
The demand curve for a monopoly firm is depicted by curve…

a. D.

b. A.

c. B.

d. C.



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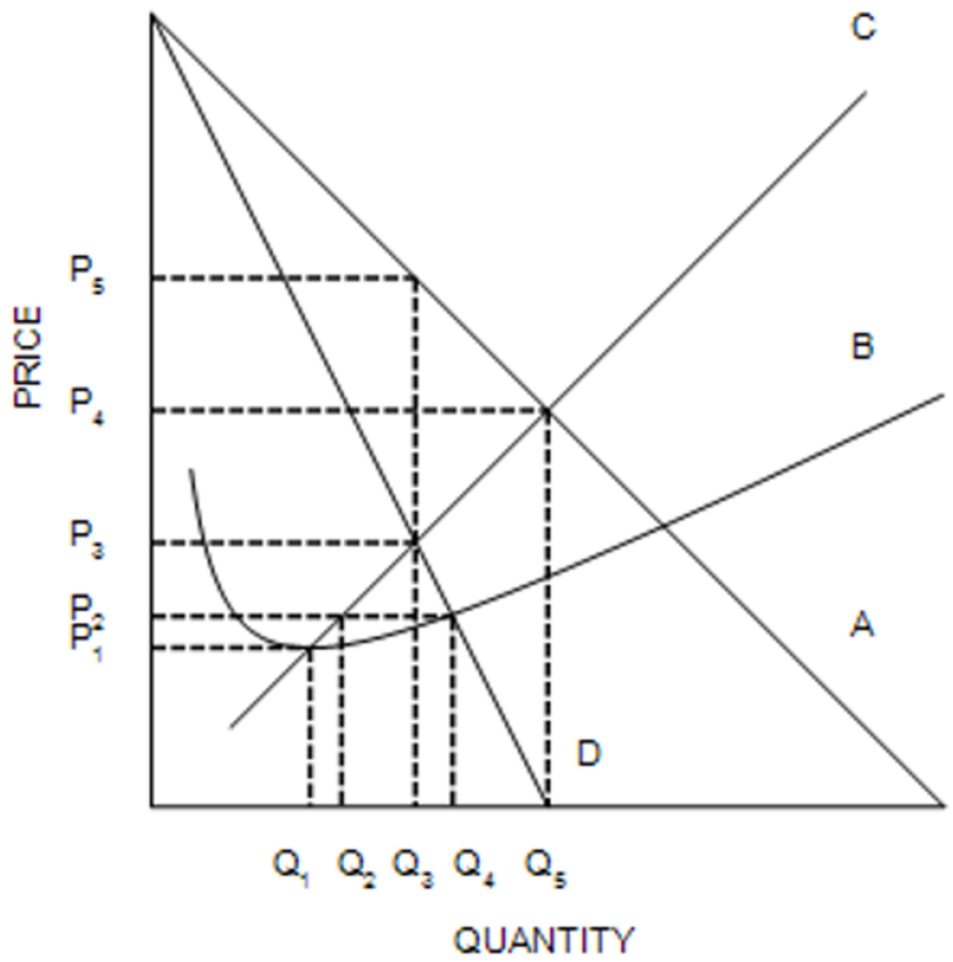


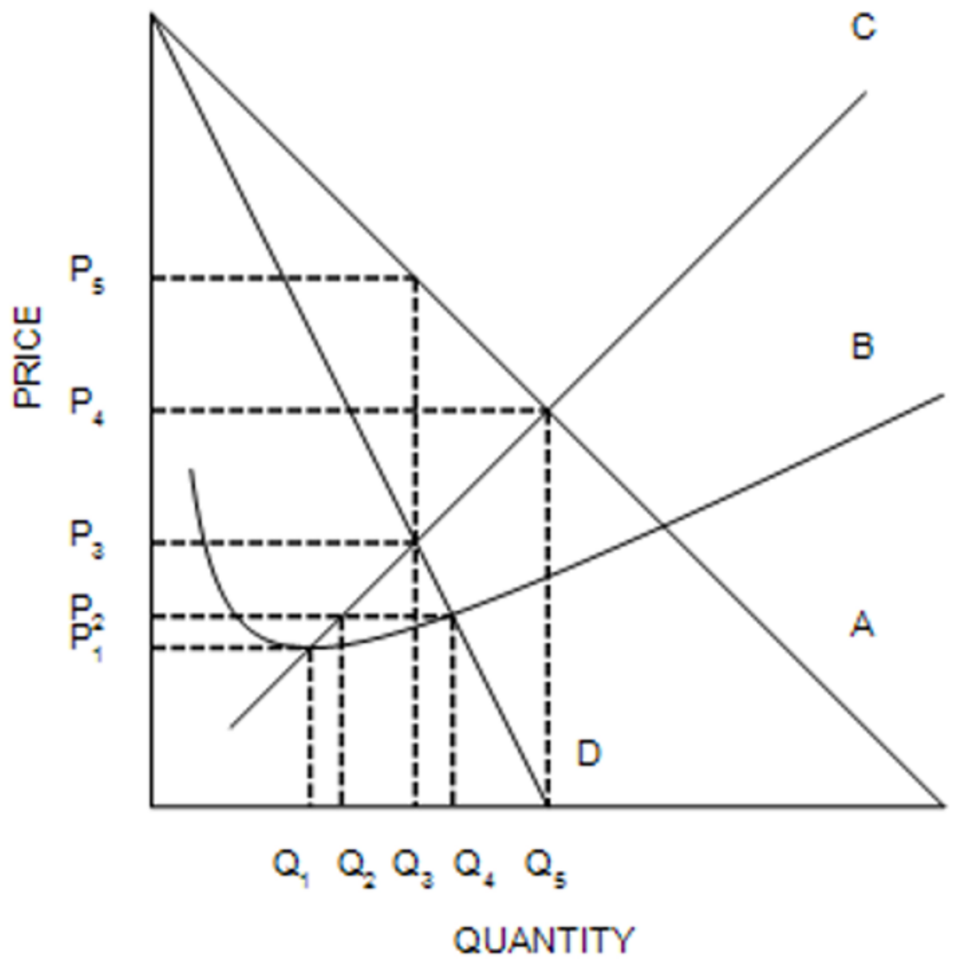
The average revenue curve for a monopoly firm is depicted by curve…

a. D.

b. A.

c. B.

d. C.



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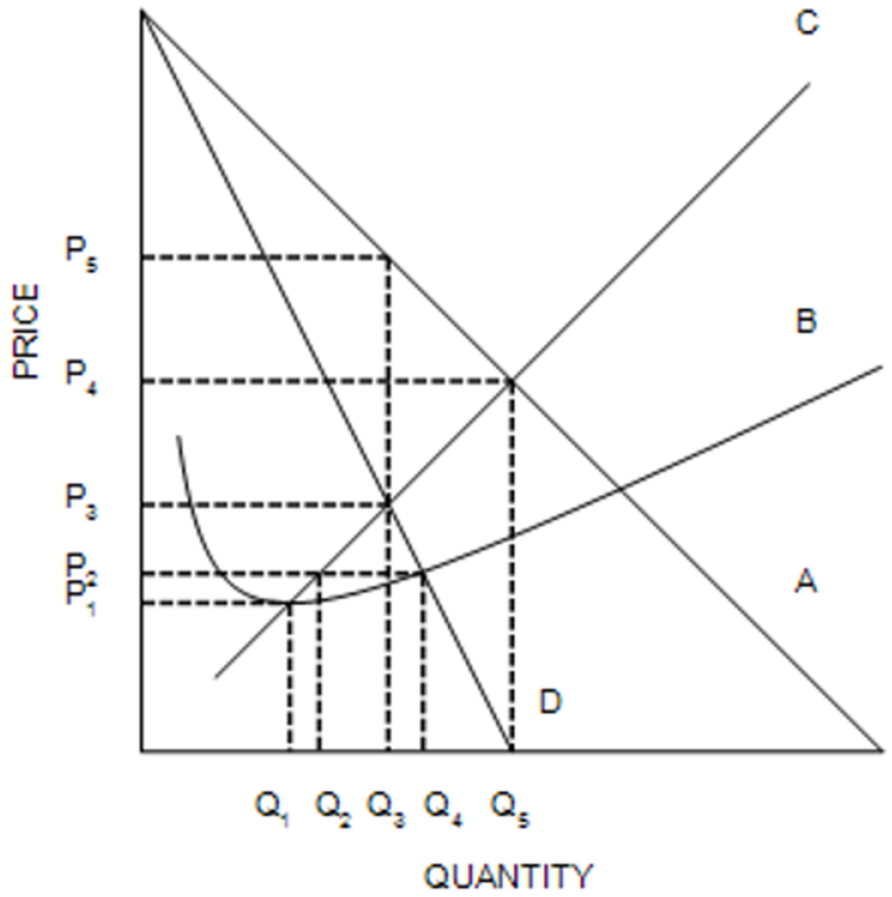


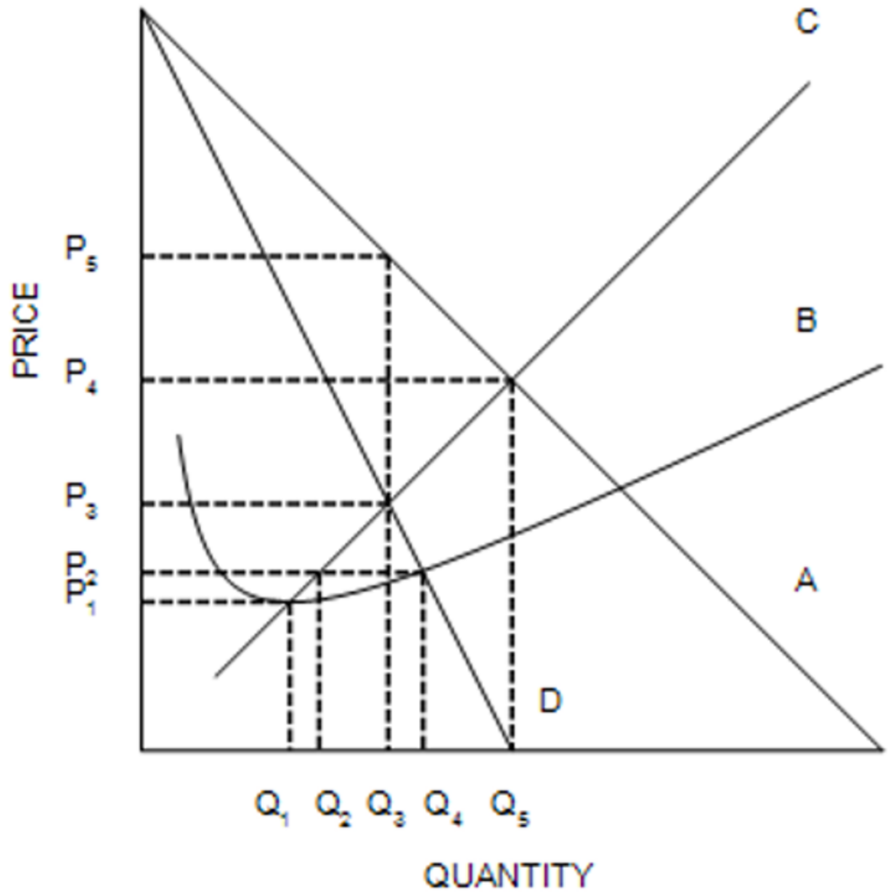
If the monopoly firm is currently producing Q_4 units of output, then a decrease in output will necessarily cause profit to…

a. remain unchanged.

b. decrease.

c. increase if the output is between Q_3 and Q_4.

d. increase regardless of the new level of output.



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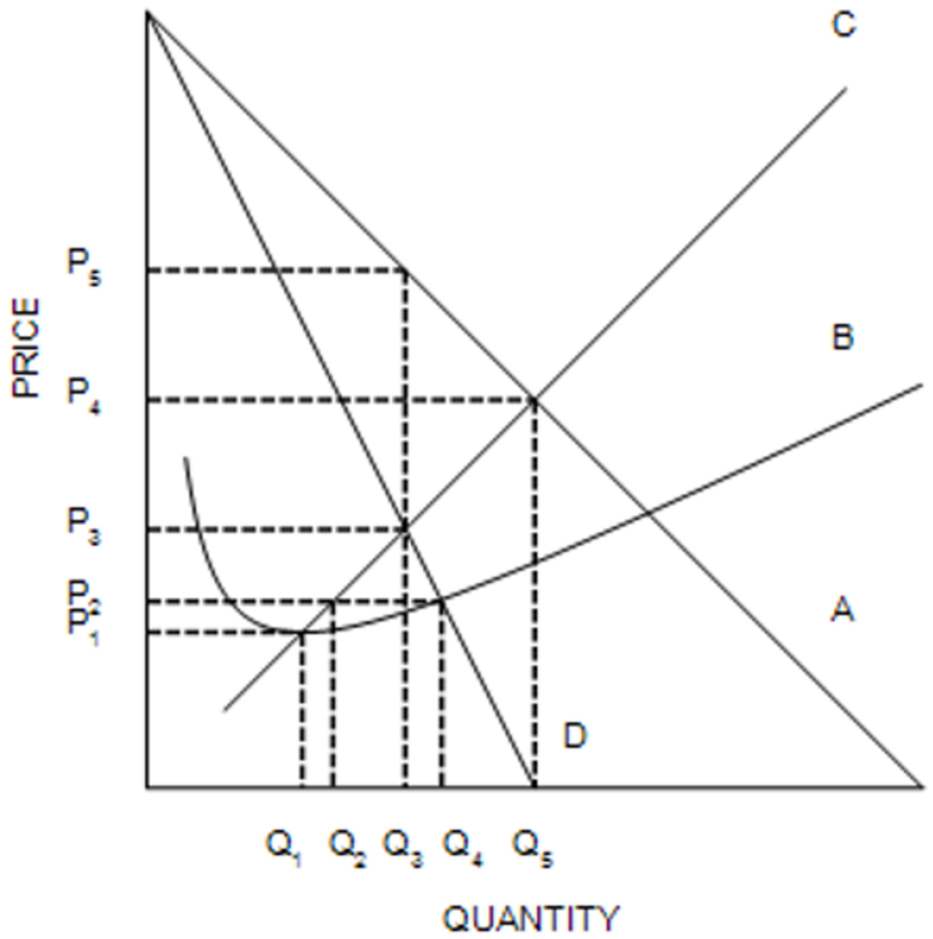


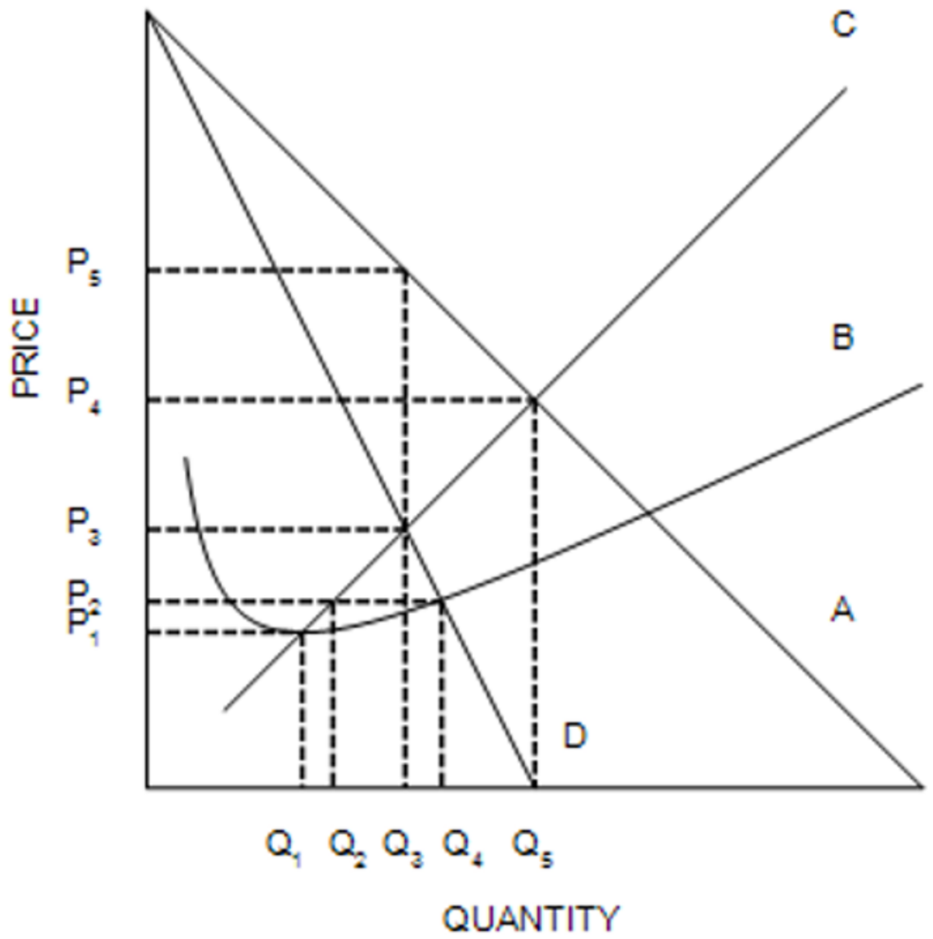
Profit can always be increased by increasing the level of output by one unit if the monopolist is currently operating at…

a. Q_4 only.

b. Q_1 or Q_2 only.

c. Q_5 only.

d. Q_3, Q_4, or Q_5 only.



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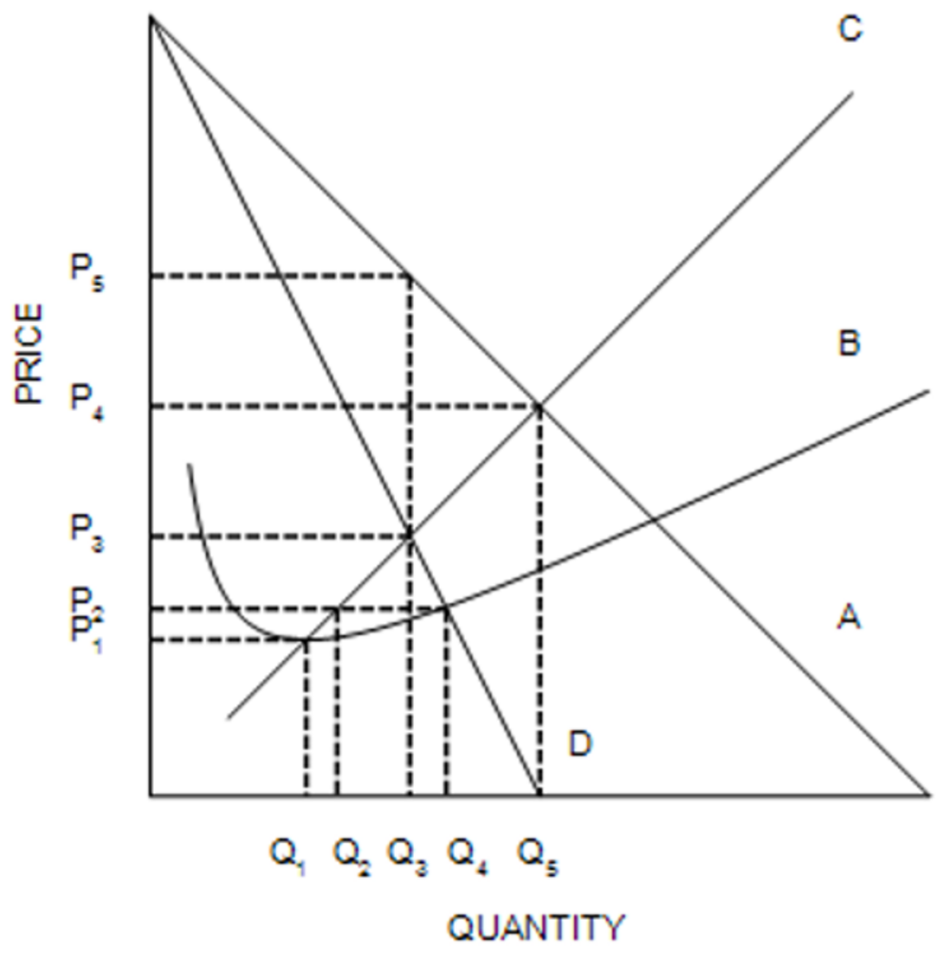


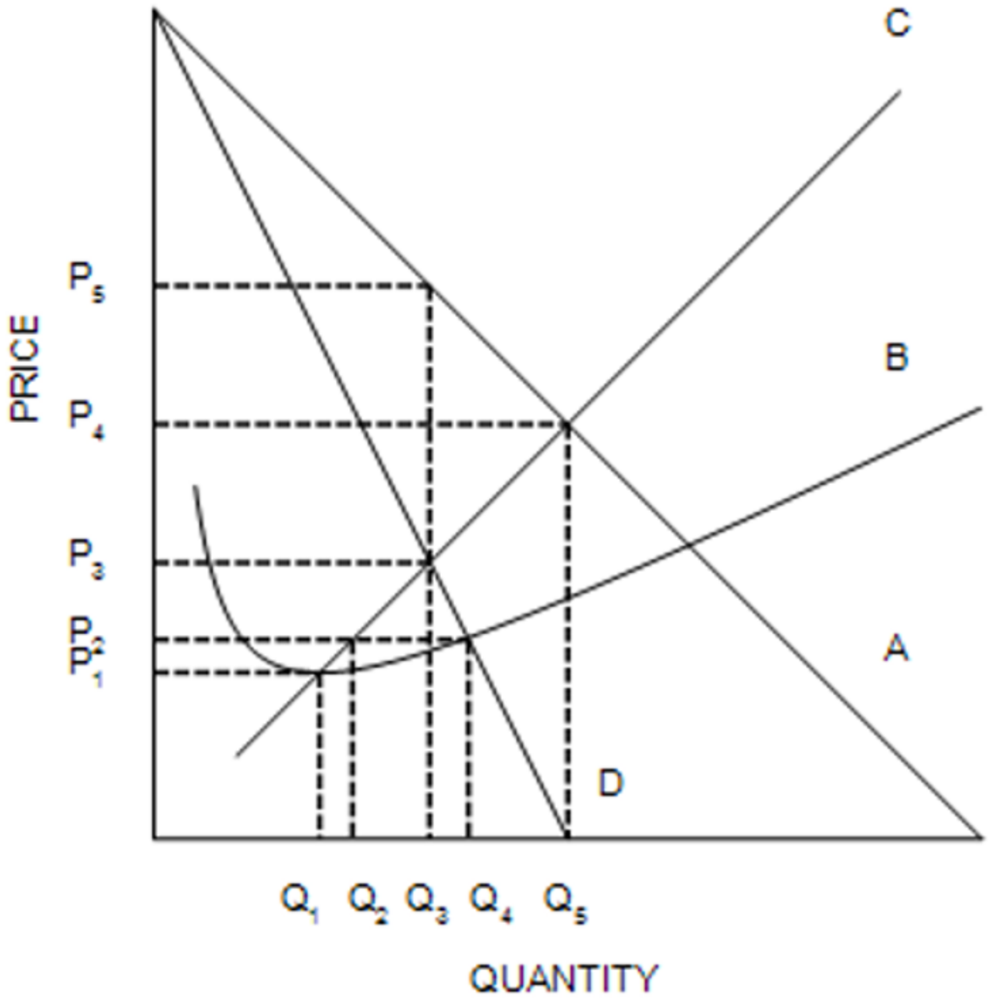
A profit-maximizing monopoly's total revenue is equal to…

a. $P_5 \times Q_3$.

b. $P_4 \times Q_5$.

c. $(P_5 - P_3) \times Q_3$.

d. $(P_5 - P_4) \times Q_3$.



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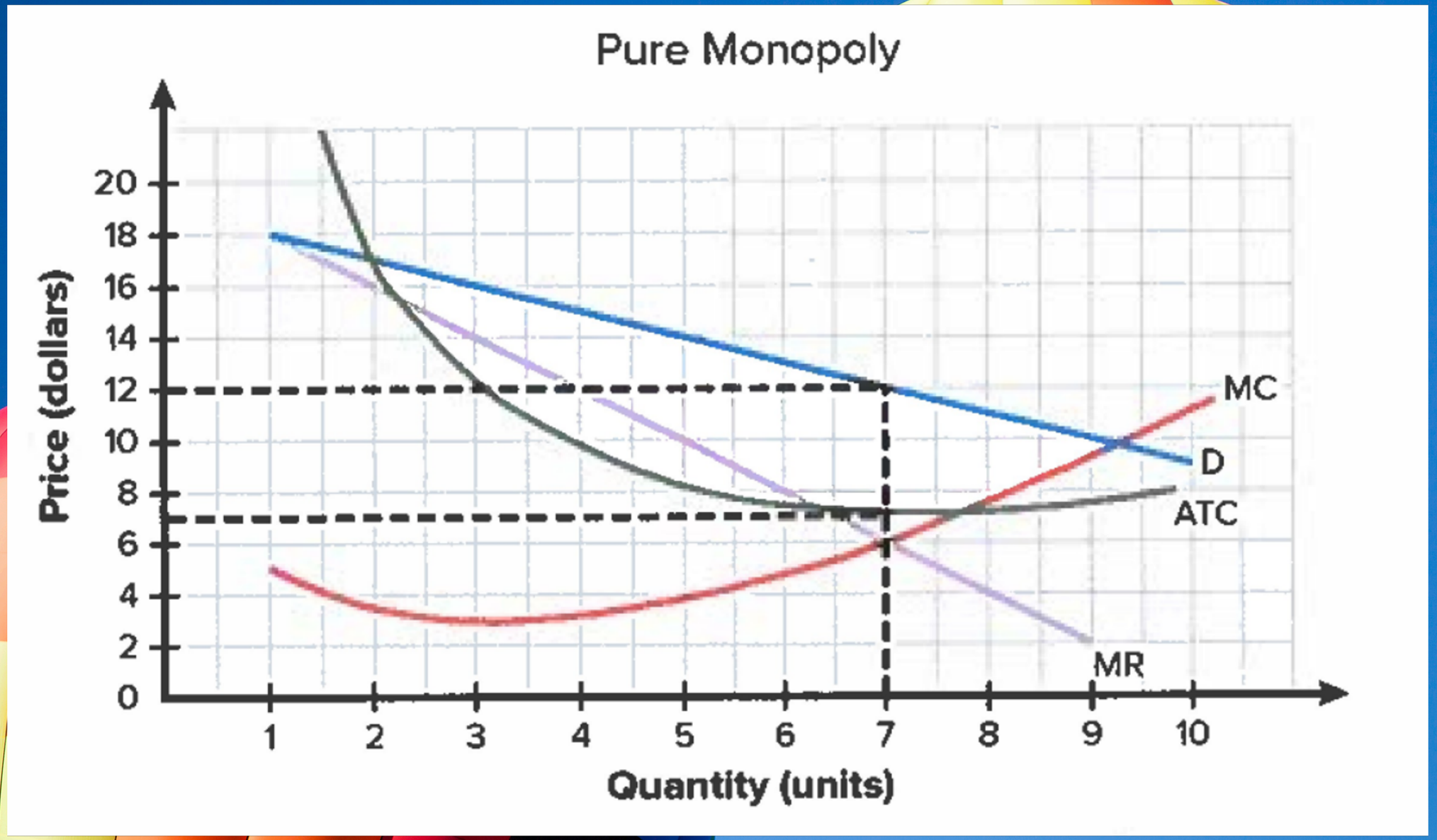
c. $(P_5 - P_3) \times Q_3$.

d. $(P_5 - P_4) \times Q_3$.

RECAP

- Monopoly Profit-Maximization
  - If, MR > MC, produce more!
  - If MR < MC, produce less!
  - If MR = MC, profit is maximized!
- Monopolies will produce where MR = MC.
- For monopolies, P > MR.
- Monopolies don’t reach zero-economic profit like competitive firms. This means the social optimum output isn’t reached.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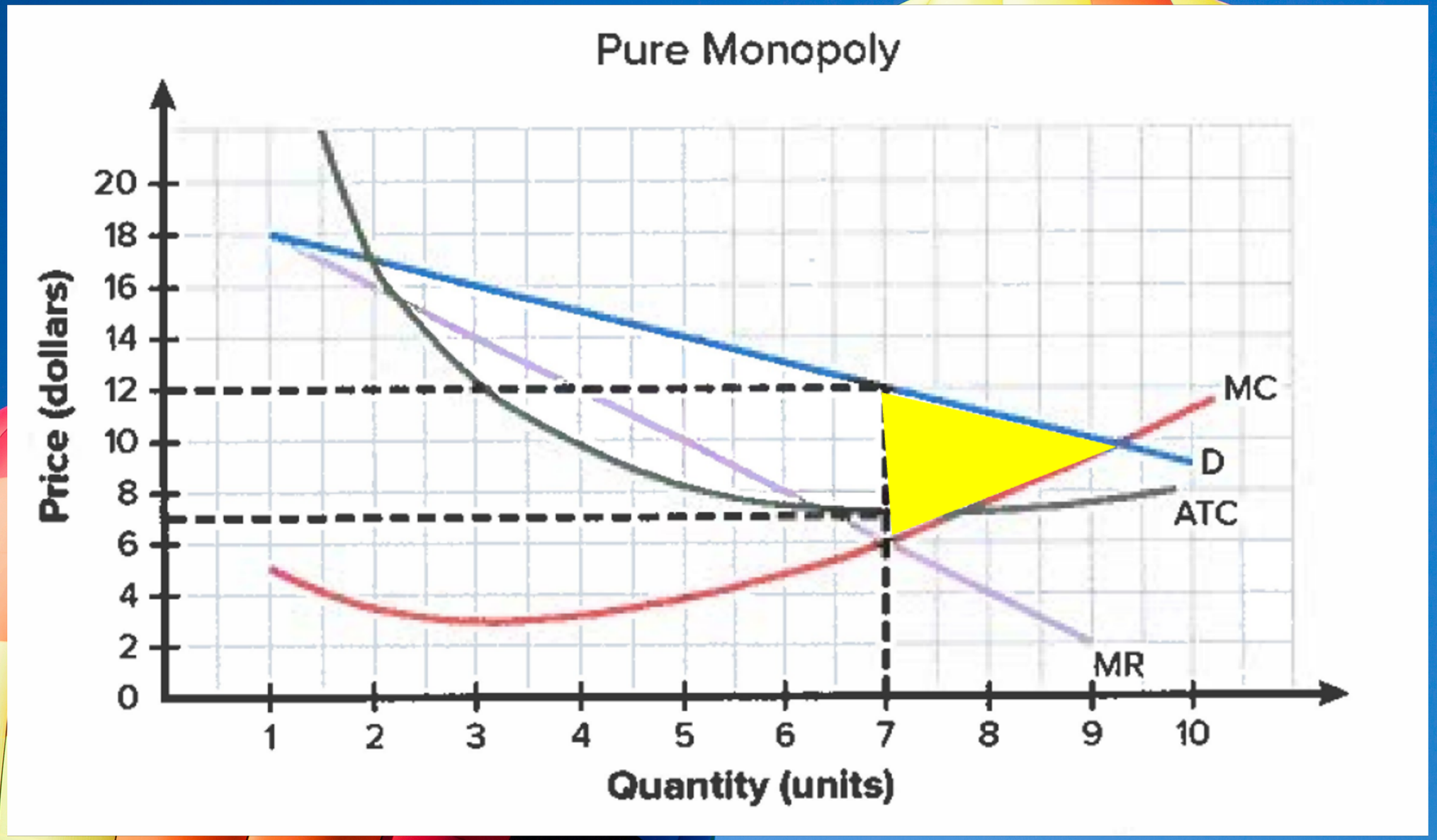
D
ATC
MR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Quantity (units)
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D
ATC
MR

End of class.
Thanks for your attention!