

Exercise walk-through

Profit Maximization ■ 3.5

eXercise

You must be able to

- calculate **total**, **average**, and **marginal revenue** 边际收益
- state the **profit-maximizing rule**: produce where **marginal revenue equals marginal cost**
- explain why $MR = MC$ maximizes profit or minimizes loss
- calculate economic profit at the profit-maximizing quantity using P and ATC

Method — The profit-maximizing rule

Produce the quantity where $MR = MC$. Below it, an extra unit adds more revenue than cost (produce it); above it, the reverse.

Method — Economic profit

$$\text{profit} = (P - ATC) \times Q.$$

A positive $(P - ATC)$ means economic profit; a negative one means a loss.

Practice 2.1 ■ 1 mark

State the profit-maximizing rule.

Solution 2.1

Method: The profit-maximizing rule

Worked steps

produce the quantity where marginal revenue equals marginal cost **B1**.

Practice 2.2 ■ 2 marks

A firm sells at $P = \$12$ and produces $Q = 100$ where $ATC = \$9$. Find its economic profit.

Solution 2.2

Worked steps

$$\text{profit} = (P - ATC)Q = (12 - 9)(100) = \$300 \quad \text{M1} \quad \text{A1}.$$

Practice 2.3 ■ 1 mark

State why producing where $MR = MC$ maximizes profit.

Solution 2.3

Method: The profit-maximizing rule

Worked steps

below $MR = MC$ each extra unit adds more revenue than cost; above it the reverse, so profit peaks exactly where they are equal **B1**.

Exam-style 3.1 ■ 1 mark

A firm maximizes profit where

A $MR > MC$

B $MR = MC$

C $MR < MC$

D the price is highest

Solution 3.1

Method: The profit-maximizing rule

A $MR > MC$

B $MR = MC$



C $MR < MC$

D the price is highest

Worked steps

B.

Exam-style 3.2 ■ 1 mark

Economic profit per unit is

A $P - MC$

B $P - ATC$

C $P - AVC$

D $MR - AR$

Solution 3.2

Method: Economic profit

A $P - MC$

B $P - ATC$



C $P - AVC$

D $MR - AR$

Worked steps

B.

Exam-style 3.3 ■ 1 mark

A firm produces where $MR = MC$ at $Q = 50$, $P = \$20$, and $ATC = \$14$.

- (a) Find the economic profit per unit.
- (b) Find the total economic profit.

Solution 3.3

Worked steps

(a) $20 - 14 = \$6$ **B1**. (b) $6 \times 50 = \$300$ **M1** **A1**.