AP MICROECONOMICS • EXERCISE SHEET

# 3.5 Profit Maximization

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

## Objective

Build the skills to answer exam questions on **profit maximization**.

**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 $ATC$

## 1 Worked examples

Study these first. Each one shows the method for a question type used later.

### 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.

### Economic profit

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

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

## 2 Practice

**2.1** State the profit-maximizing rule. [1]

**2.2** A firm sells at $P = \$12$ and produces $Q = 100$ where $ATC = \$9$. Find its economic profit. [2]

**2.3** State why producing where $MR = MC$ maximizes profit. [1]

## 3 Exam-style questions

**3.1** A firm maximizes profit where [1]

- **A** $MR > MC$
- **B** $MR = MC$
- **C** $MR < MC$
- **D** the price is highest

**3.2** Economic profit per unit is [1]

- **A** $P - MC$
- **B** $P - ATC$
- **C** $P - AVC$
- **D** $MR - AR$

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

(a) Find the economic profit per unit. [1]

(b) Find the total economic profit. [2]

## 4 Go further

- work through the **3.5 Profit Maximization** lesson on the **Learn** page;
- read the **Production, Cost, and the Perfect Competition Model** section of the AP Microeconomics handout on the **Know** page.

## Solutions

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

**2.2** profit $= (P - ATC)Q = (12 - 9)(100) = \$300$.

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

**3.1 B**.

**3.2 B**.

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