Economics
Higher level
Paper 3

14 May 2025

Zone A morning | **Zone B** morning | **Zone C** morning

Candidate session number

1 hour 45 minutes

Instructions to candidates

- Write your session number in the boxes above.
- You are permitted access to a calculator for this paper.
- Do not open this examination paper until instructed to do so.
- Answer all the questions.
- Answers must be written within the answer boxes provided.

Answer **all** the questions. Answers must be written within the answer boxes provided.

1.   A report into fitness levels in the United States of America (USA) says that only about 23 % of all USA adults get the recommended amount of exercise. Walking, cycling, swimming, playing sports or doing domestic jobs such as gardening can all contribute to personal fitness. The following information is a cause for concern:
   - Only one in three children are physically active every day.
   - Less than 5 % of adults participate in 30 minutes of physical activity each day.
   - Children now spend more than seven hours per day in front of a screen (for example, televisions, video game devices, computers).

   At the same time, there has been a significant increase in demand for memberships at gyms (fitness centres), causing the fitness industry to grow by 8.7 % in the past few years.

   Despite the increase in gym memberships, there is still concern about the lack of exercise in the USA. This is particularly important, as physical inactivity is estimated to result in USD 130 billion in annual healthcare spending and causes a significant reduction in the productivity of labour.

   Figure 1 illustrates the market for gym memberships in the USA. D represents the demand for and S represents the supply of gym memberships. D_1 represents the increased demand for gym memberships in recent years.

Price of monthly gym membership (y-axis): 10, 20, 30, 40, 50, 60, 70, 80

Quantity of monthly gym memberships (millions) (x-axis): 50, 100, 150, 200, 250

D

D_1
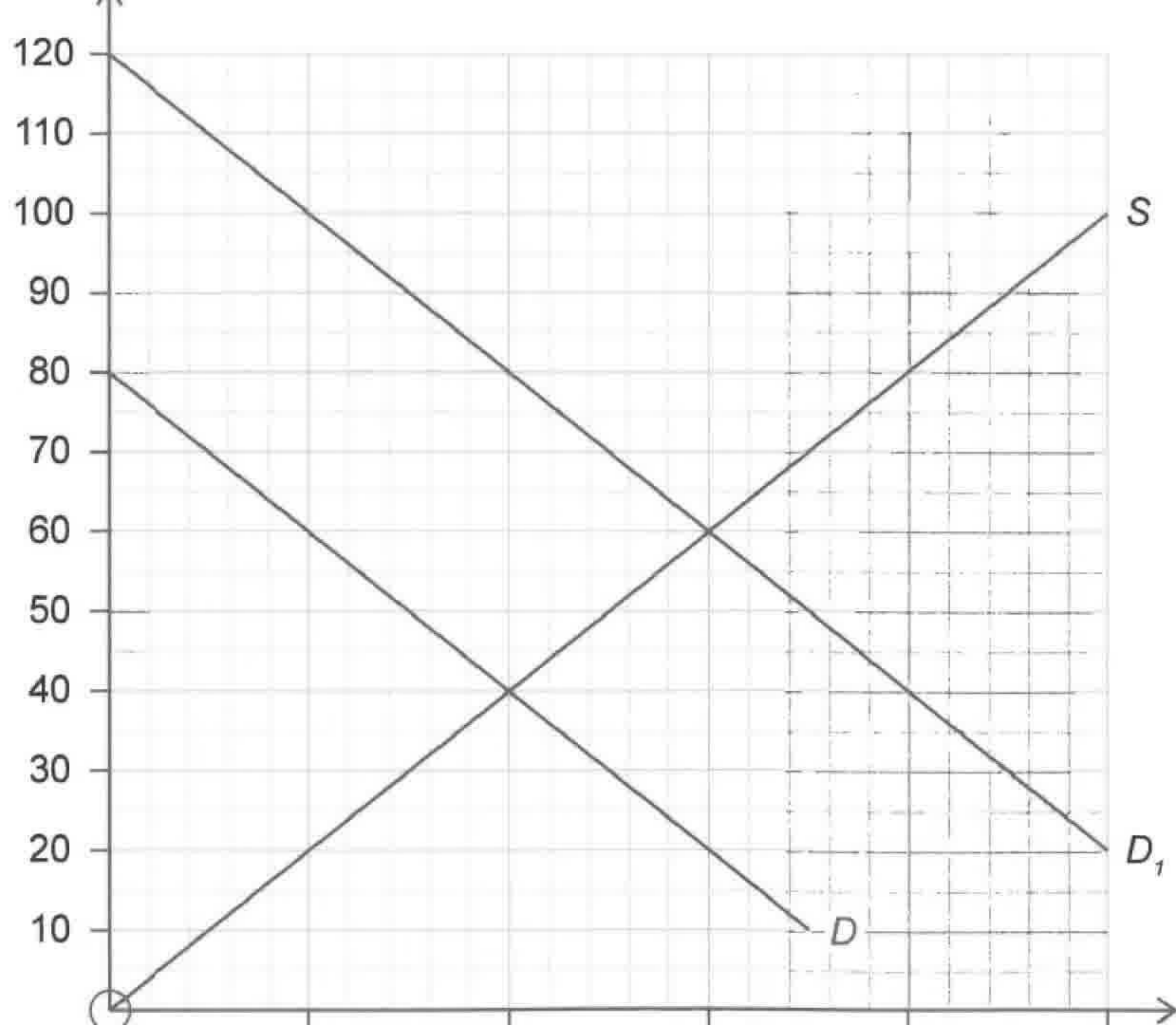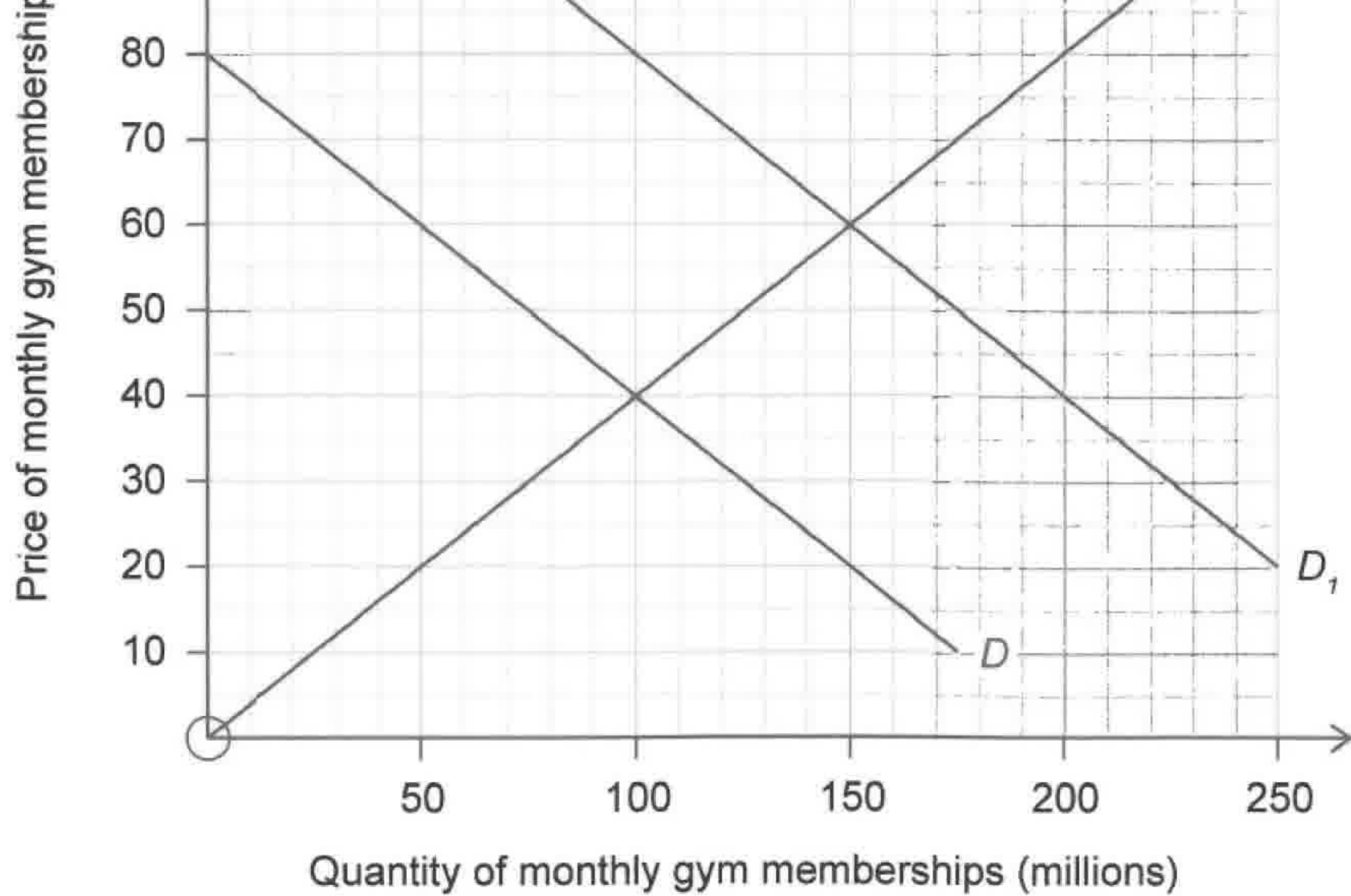
(Question 1 continued)

(a) (i) Using **Figure 1**, calculate the change in consumer surplus resulting from the increased demand for gym memberships. [2]

(ii) Using a diagram, explain how market failure may exist in the market for gym memberships. [4]

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(Question 1 continued)

Researchers have investigated the reasons for low levels of physical activity. An economics professor has argued that the main reason for the lack of exercise among USA adults is that they have "bounded self-control". Others argue there is poor awareness of the benefits of regular physical exercise.

(iii)   Define the term *bounded self-control*. [2]

A small town in the USA has a population of 2700. Given the high cost of exercise equipment and the small population, the gym in the town is considered to be a natural monopoly.

(iv)   Sketch a diagram showing the average cost curve for a natural monopoly. [2]

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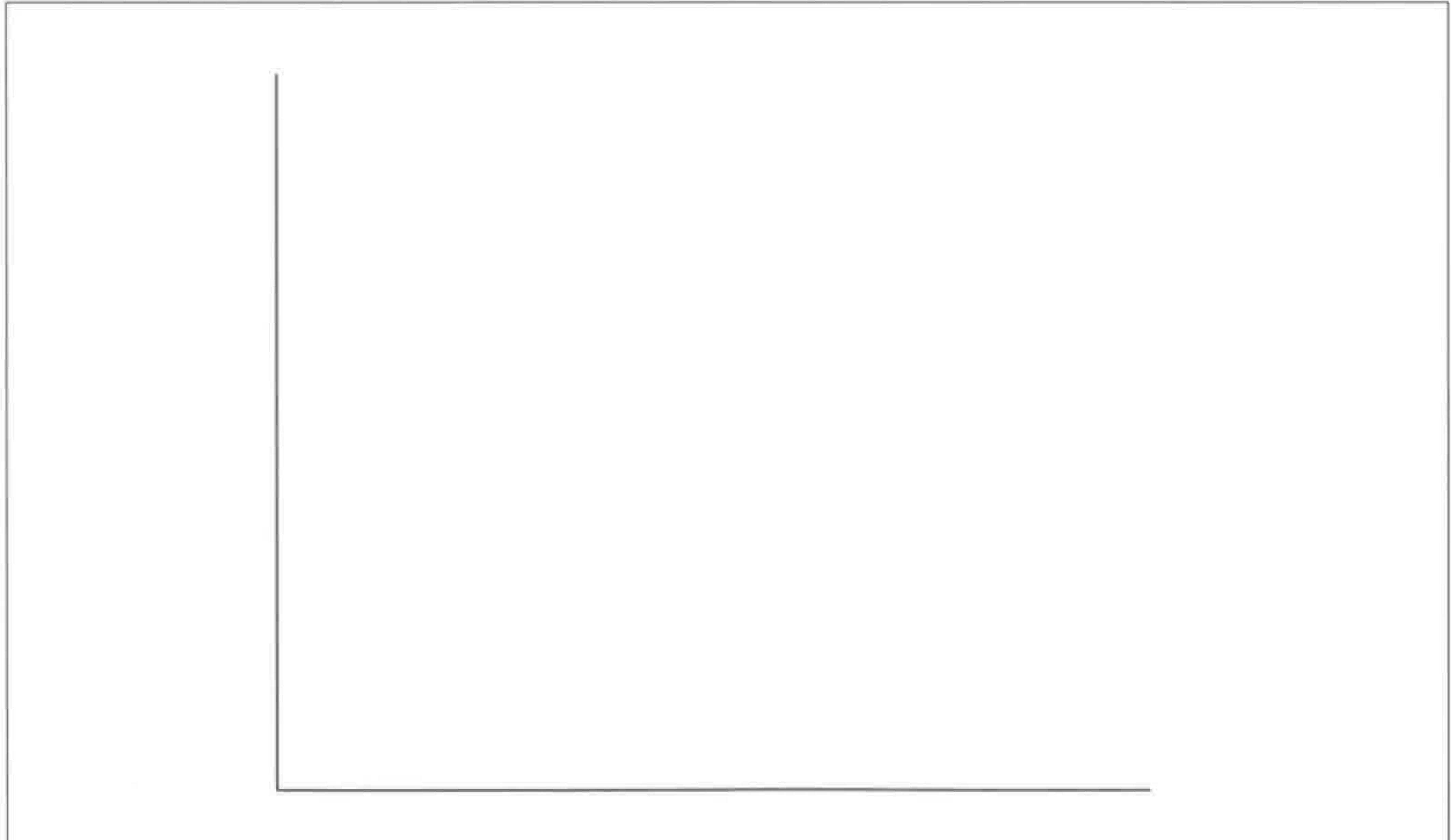
Table 1 provides financial information for the town's only gym. The price per member is the price of a monthly subscription to the gym (a membership fee).

Table 1

Monthly price per member (USD)	Number of members	Monthly total costs (USD)
120	100	8000
110	200	13000
100	300	17500
90	400	21600
80	500	24700

(v)   Using Table 1, calculate the marginal revenue if the number of members increases from 300 to 400 per month.

[2]

(vi) Using **Table 1**, calculate the increase in profit if the number of members increases from 400 to 500 per month. [2]

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(Question 1 continued)

    (vii)   If the number of members increases from 500 to 600 per month, total costs per month will increase by USD 2800. Using **Table 1**, calculate the average cost per member for 600 members.   [2]

Some residents of the town have complained that the gym membership fee is too high and that the owner only cares about profit. The owner has stated that this is false and that profit is not the main objective of the business.

    (viii) Explain **two** alternative business objectives (other than profit maximization) which the owner might adopt.   [4]

(b)   Using the text/data provided and your knowledge of economics, recommend a policy which could be introduced by the government of the USA to increase the number of people getting regular exercise.   [10]

2. The economy of Japan has been subject to many periods of deflation since 1993. Consequently, price increases became unusual, and the expected inflation rate has often been close to zero. Most price rises have been the result of a depreciated yen (JPY), the currency in Japan.

An expansionary fiscal policy has not lead to a significant rise in the price level, partly because of a lack of business and consumer confidence. Therefore, the central bank, the Bank of Japan, has set a target rate of 2% for sustainable and stable inflation.

Figure 2 plots the inflation rate against the unemployment rate in Japan for selected dates from 1993 to 2022. *SRPC* is the short-run Phillips curve.
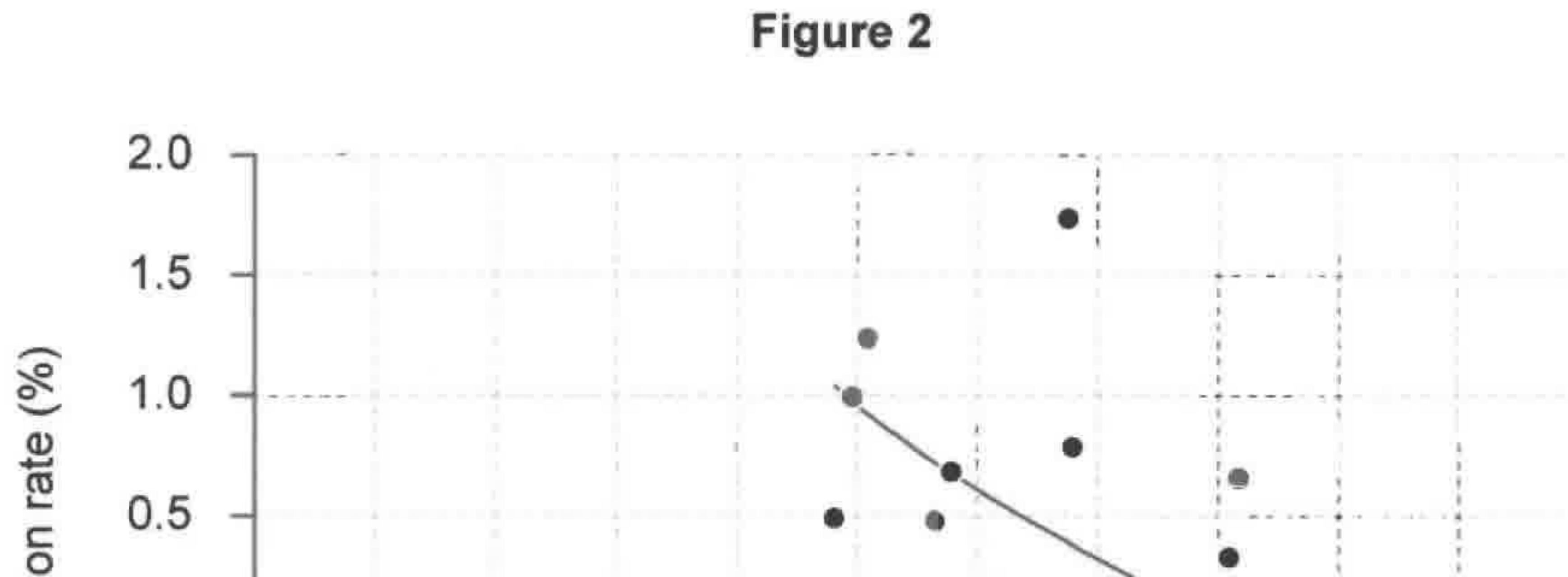
Figure 2

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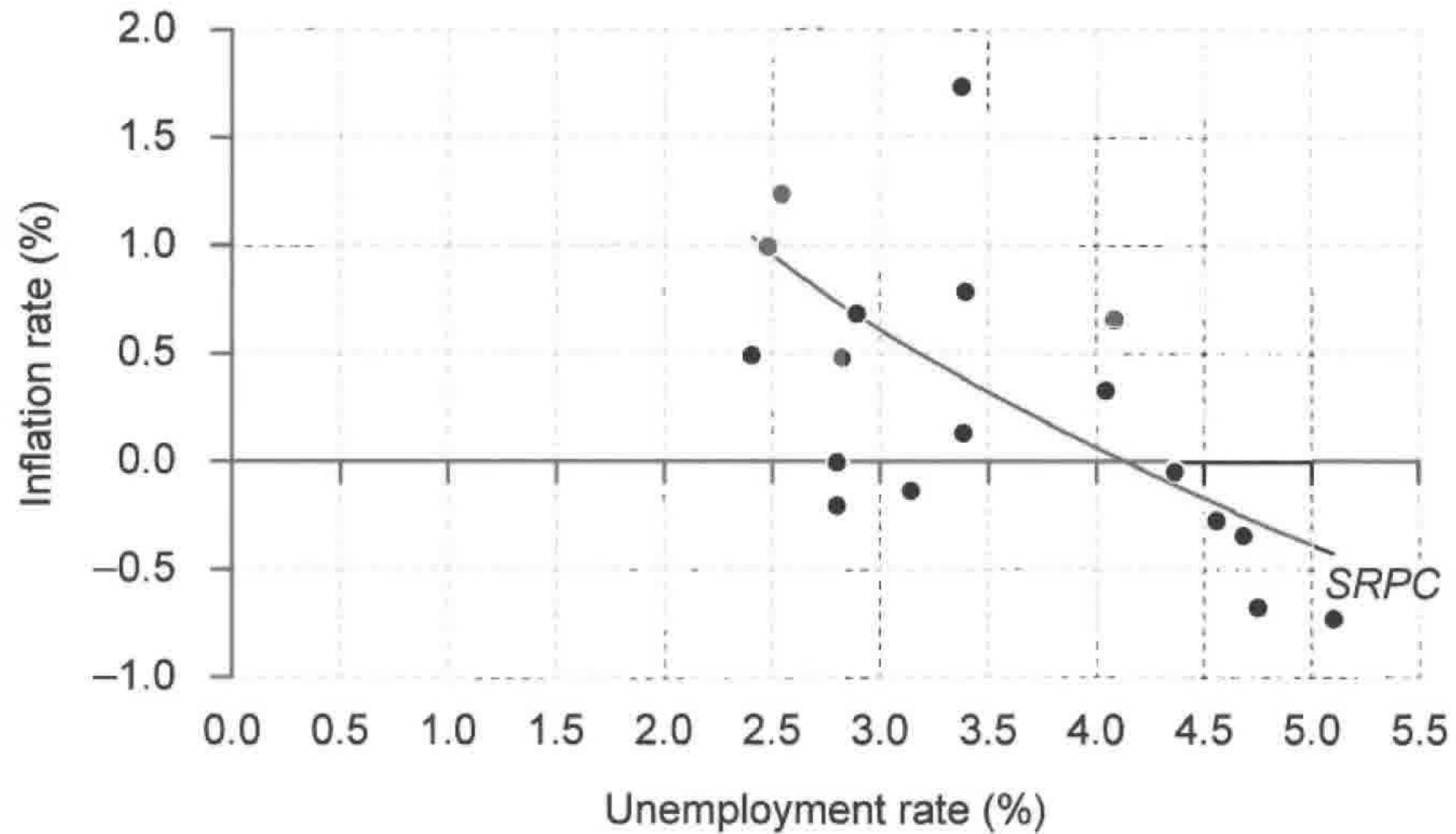
Figure 2

(a) (i) Outline the relationship shown by the data in **Figure 2**. [2]

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The changing structure of the Japanese economy from manufacturing towards services has led to mismatches in job opportunities and skills. As a result, the 3 % natural rate of unemployment is mostly due to structural unemployment.

(ii) On **Figure 2**, draw the long-run Phillips curve for Japan. [1]

The consumer price index (CPI) for Tokyo (the capital city of Japan) is based on a wide range of items that the typical household in Tokyo purchased during the base year 2020. **Table 2** shows some selected items in the basket of goods of a typical consumer in Tokyo, with the unit prices in JPY. The quantities purchased per week are used as weights.

Table 2

	Quantity purchased per week	Price per unit (JPY)		
	2020	2020	2022	2023
Rice (kilograms)	2	2284	2200	2304
Childcare (hours)	3	5500	5500	5500
Self-service coffee (cups)	1	100	102	110

Table 3 shows the total cost of the basket of goods that the typical consumer in Tokyo purchases per week in JPY as well as the consumer price index (CPI) for Tokyo.

Table 3

Childcare (hours)	3	5500	5500	5500
Self-service coffee (cups)	1	100	102	110

Table 3 shows the total cost of the basket of goods that the typical consumer in Tokyo purchases per week in JPY as well as the consumer price index (CPI) for Tokyo.

Table 3

	2020	2022	2023
Total cost of basket of goods per week (JPY)	21 168	21 002	
Consumer price index (CPI)	100.00	99.22	

(iii) Using **Table 2**, calculate the total cost of the basket of goods per week in JPY in 2023. Enter your result in **Table 3**. [2]

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(iv)   Using **Table 3**, calculate the CPI for Tokyo in 2023. Enter your result in **Table 3**.   [1]

(v)   Using **Table 3**, calculate the rate of inflation for 2023.   [2]

(vi)   Explain **two** limitations of using the CPI to estimate the inflation rate in Tokyo.   [4]

The market structure of banks in Japan is an oligopoly. Bank A and Bank B are two commercial banks. Each bank can choose a strategy of either raising or lowering the interest rate on loans.

The cells in the payoff matrix in **Table 4** show the interdependent profits that would result. The entries below the diagonal lines show Bank A's profit while the entries above the diagonal lines, in bold, show Bank B's profit.

Table 4

	Strategy	Bank B	
		Raise interest rate	Lower interest rate
Bank A	Raise interest rate	**JPY 3 million** / JPY 3 million	**JPY 3.2 million** / JPY 2 million
	Lower interest	**JPY 2 million**	**JPY 2.5 million**

the diagonal lines, in bold, show Bank B's profit.

Table 4

Strategy		Bank B	
		Raise interest rate	Lower interest rate
Bank A	Raise interest rate	**JPY 3 million** JPY 3 million	**JPY 3.2 million** JPY 2 million
	Lower interest rate	**JPY 2 million** JPY 3.2 million	**JPY 2.5 million** JPY 2.5 million

Assume that the two banks decide to collude and come to an agreement that would maximize their joint profits.

(Question 2 continued)

(vii) Using **Table 4**, identify a strategy for each bank that would maximize their combined total profits. [1]

(viii) Using profit figures from **Table 4**, show that Bank A has an incentive to cheat by not following the agreement. [2]

The nominal interest rate on savings in Bank A is 0.8%. The rate of inflation is 1.0%.

(ix)   Calculate the real interest rate.   [1]

The process of money creation by the commercial banks increases the money supply. The Bank of Japan can control the size of the money supply through open market operations, quantitative easing or by changing the minimum reserve requirement, which is 0.8%.

(x)   Explain the money creation process by which a customer's cash deposit of JPY 10000 in Bank A eventually results in a much greater increase in Japan's money supply.   [4]

(Question 2 continued)

    (b)   Using the text/data provided and your knowledge of economics, recommend a policy that could be used in Japan to increase the rate of inflation to 2%   [10]