

3. The table below shows the total cost and total benefit of advertisements placed by AZY Foods, a firm in the retail food market.

Number of Advertisements	Total Cost (\$)	Total Benefit (\$)
1	300	1,200
2	500	2,200
3	800	3,000
4	1,300	3,600
5	2,100	4,000
6	3,000	4,200
7	4,100	4,200

- (a) Calculate the total net benefit of placing three advertisements. Show your work.
- (b) Calculate the marginal net benefit of the third advertisement. Show your work.
- (c) What is the optimal number of advertisements placed by AZY Foods? Explain using marginal analysis.
- (d) Suppose over the next year the marginal benefit that AZY Foods receives from each advertisement increases by \$300. Identify the optimal number of advertisements.
- (e) There are many firms in the retail food market. Each firm places its own firm-specific advertisements without considering the actions of its competitors. In what market structure is AZY Foods operating?

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

Question 3: Short**5 points**

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- (a) Calculate the total net benefit of placing three advertisements as \$2,200 and show your work: **1 point**

$$\text{Total net benefit} = \$3,000 - \$800 = \$2,200$$

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- (b) Calculate the marginal net benefit of the third advertisement as \$500 and show your work: **1 point**

$$\text{Marginal net benefit} = (\$3,000 - \$2,200) - (\$800 - \$500) = \$800 - \$300 = \$500$$

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- (c) Identify the optimal number of advertisements as 4 and explain that the marginal net benefit of the 4th advertisement is positive ($\$600 - \$500 = \$100$), but the marginal net benefit of the 5th advertisement is negative ($\$400 - \$800 = -\$400$). **1 point**

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- (d) Identify the optimal number of advertisements as 4. **1 point**

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- (e) State that AZY Foods is operating in a monopolistically competitive market structure. **1 point**

Total for question 3 5 points