

AZY Foods – Advertisement Analysis

AP Microeconomics – Question 9

Full Marginal Analysis Table

The table below derives Marginal Cost (MC), Marginal Benefit (MB), and Net Benefit from the original data. The highlighted row (4 ads) is the optimal quantity.

Ads	Total Cost (\$)	Total Benefit (\$)	Marginal Cost (\$)	Marginal Benefit (\$)	Net Benefit (\$)
1	300	1,200	300	1,200	900
2	500	2,200	200	1,000	1,700
3	800	3,000	300	800	2,200
4	1,300	3,600	500	600	2,300
5	2,100	4,000	800	400	1,900
6	3,000	4,200	900	200	1,200
7	4,100	4,200	1,100	0	100

Part (a): Total Net Benefit of 3 Advertisements

Total Net Benefit = Total Benefit – Total Cost

Total Net Benefit = \$3,000 – \$800 = \$2,200

At 3 advertisements, AZY Foods receives \$3,000 in total benefit while spending only \$800 in total cost, yielding a net benefit of **\$2,200**.

Part (b): Marginal Net Benefit of the 3rd Advertisement

Marginal Net Benefit = Marginal Benefit (MB) – Marginal Cost (MC)

MB of 3rd ad = Total Benefit at 3 – Total Benefit at 2 = \$3,000 – \$2,200 = \$800

MC of 3rd ad = Total Cost at 3 – Total Cost at 2 = \$800 – \$500 = \$300

Marginal Net Benefit = \$800 – \$300 = \$500

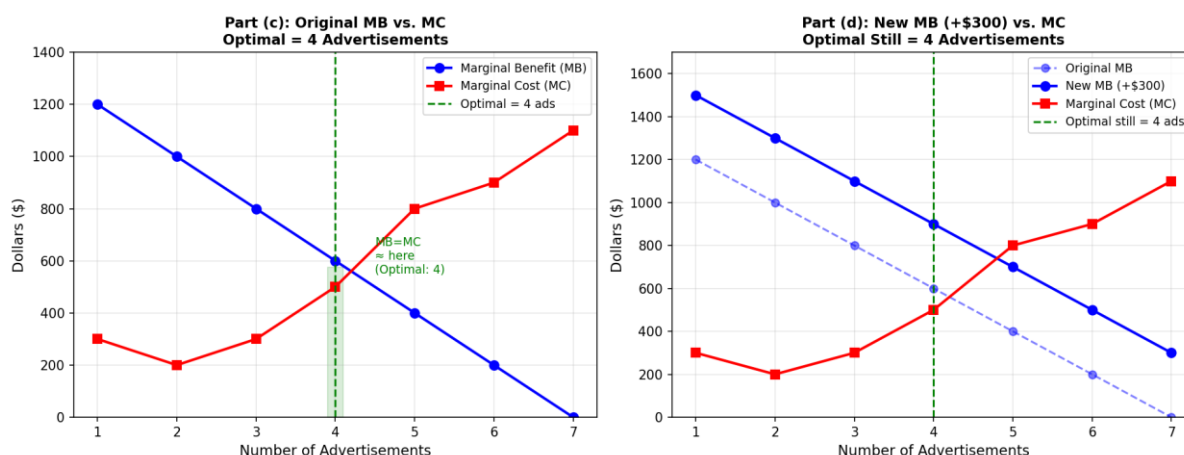
Alternatively: Net Benefit at 3 – Net Benefit at 2 = \$2,200 – \$1,700 = **\$500**.

Part (c): Optimal Number of Advertisements (Marginal Analysis)

The optimal quantity is where **MB = MC** (or where MB crosses below MC). A firm should continue placing ads as long as each additional ad benefit exceeds its cost.

- Ad 1: MB \$1,200 > MC \$300 → **Place it**
- Ad 2: MB \$1,000 > MC \$200 → **Place it**
- Ad 3: MB \$800 > MC \$300 → **Place it**
- Ad 4: MB \$600 > MC \$500 → **Place it (last beneficial ad)**
- Ad 5: MB \$400 < MC \$800 → **Stop — cost exceeds benefit**

The **optimal number of advertisements is 4**, where net benefit is maximized at \$2,300.



The left chart shows MB declining and MC rising. The optimal point is at 4 ads where the gap between MB and MC closes. The 5th ad has MB (\$400) below MC (\$800), so it should not be placed.

Part (d): Optimal Advertisements After MB Increases by \$300

Each advertisement marginal benefit increases by \$300. The new MB values are compared to the unchanged MC values below:

Ads	MC (\$)	New MB (\$)	MB vs MC	Decision
1	300	1,500	$1,500 > 300$	✓ Place
2	200	1,300	$1,300 > 200$	✓ Place
3	300	1,100	$1,100 > 300$	✓ Place
4	500	900	$900 > 500$	✓ Place
5	800	700	$700 < 800$	✗ Stop
6	900	500	$500 < 900$	✗ Stop
7	1,100	300	$300 < 1,100$	✗ Stop

Even with a \$300 increase, the 5th ad new MB (\$700) still falls short of its MC (\$800). The **optimal number remains 4 advertisements**.

The right chart above shows the new MB curve shifted upward by \$300. The intersection with MC still occurs between ads 4 and 5, confirming the optimal quantity is unchanged.

Part (e): Market Structure

AZY Foods operates in Monopolistic Competition.

The question states:

- There are **many firms** in the retail food market.
- Each firm places **firm-specific advertisements** — meaning products are differentiated.
- Each firm acts **independently**, without considering competitors' actions.

These are the defining characteristics of **monopolistic competition**: many sellers, differentiated products, and independent decision-making. Unlike perfect competition, firms

have some pricing power due to product differentiation (advertising creates brand identity). Unlike oligopoly, firms do not strategically interact or collude.