Profit, Cost, and Revenue

October 28, 2013

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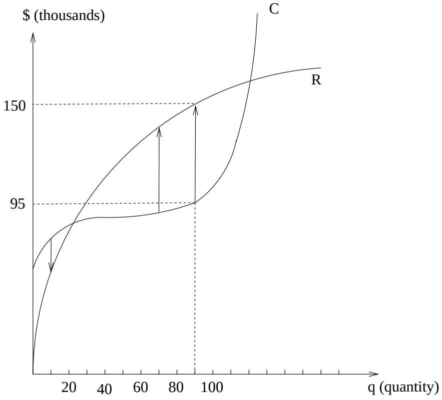
- $MC = C'$: Marginal cost; $MR = R'$: Marginal revenue

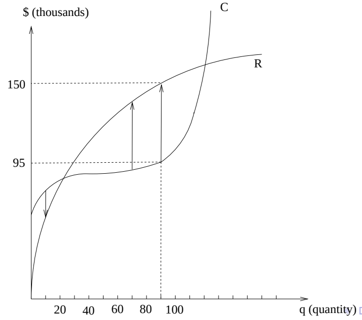
Example

Estimating maximum profit if the revenue and cost are given by the curves R and C, respectively, in the figure.



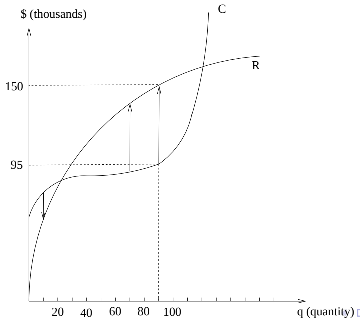
Example

- Profit = Revenue − Cost



Example

- Profit =Revenue − Cost
- Profit is represented by the the vertical distance from curve C to curve R, marked by vertical arrow.



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- Profit $=$Revenue $-$ Cost
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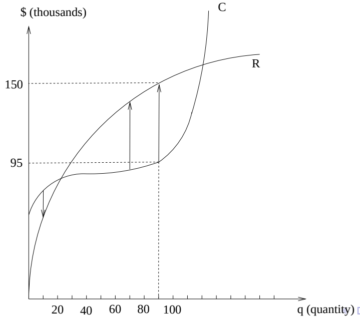
- Arrow is going down $\Longrightarrow$ No profit



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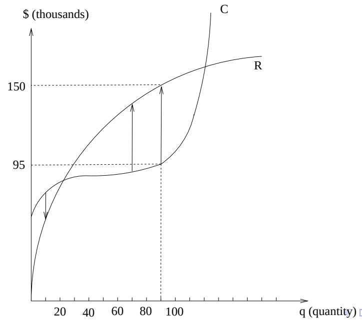
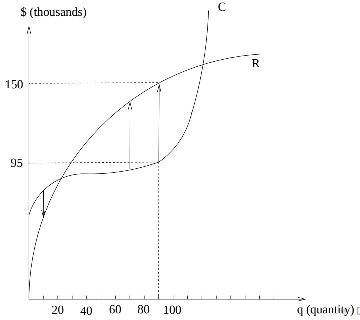


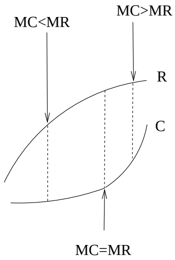
Example

- Profit =Revenue − Cost
- Profit is represented by the the vertical distance from curve C to curve R, marked by vertical arrow.
- Arrow is going down $\Longrightarrow$ No profit
- Arrow is going up $\Longrightarrow$ Making profit
- Profit is maximized if the arrow is going up and has the largest distance.



Example

- We now analyze the marginal costs and marginal revenues near the optimal point.



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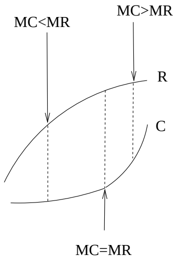

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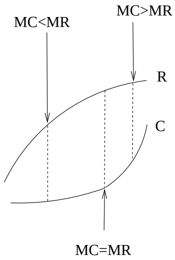
- $\pi'(q) = R'(q) - C'(q) = 0$



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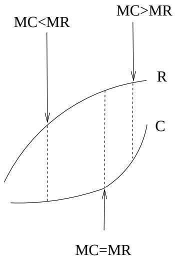
- $MR = R' = C' = MC$.



Conclusion

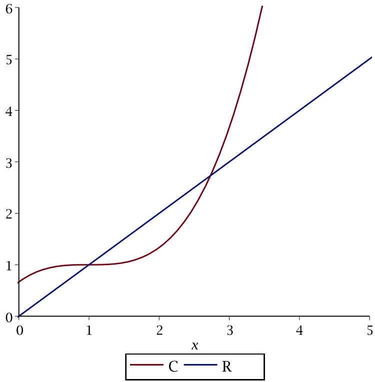
The maximum or minimum profit can occur where marginal profit=0. That is where marginal revenue=marginal cost.

Example

The (total) revenue and (total) cost curves for a product are given in the Figure.

(a) Sketch (roughly) the marginal cost and revenue.

(b) Graph the profit function $\pi(q)$.



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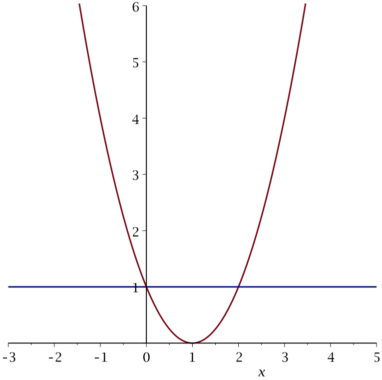

Example

Find the quantity which maximizes the profit if the total revenue and total cost (in dollars) are given by

$$R(q) = 5q - 0.003q^2$$

$$C(q) = 300 + 1.1q$$

where q is quantity and $0 \leq q \leq 1000$ units. What production level gives the maximize profit?

Maximize Revenue

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- Find the demand equation.
- Express revenue as a function of price
- What price should the company charge per trip to maximize revenue?

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