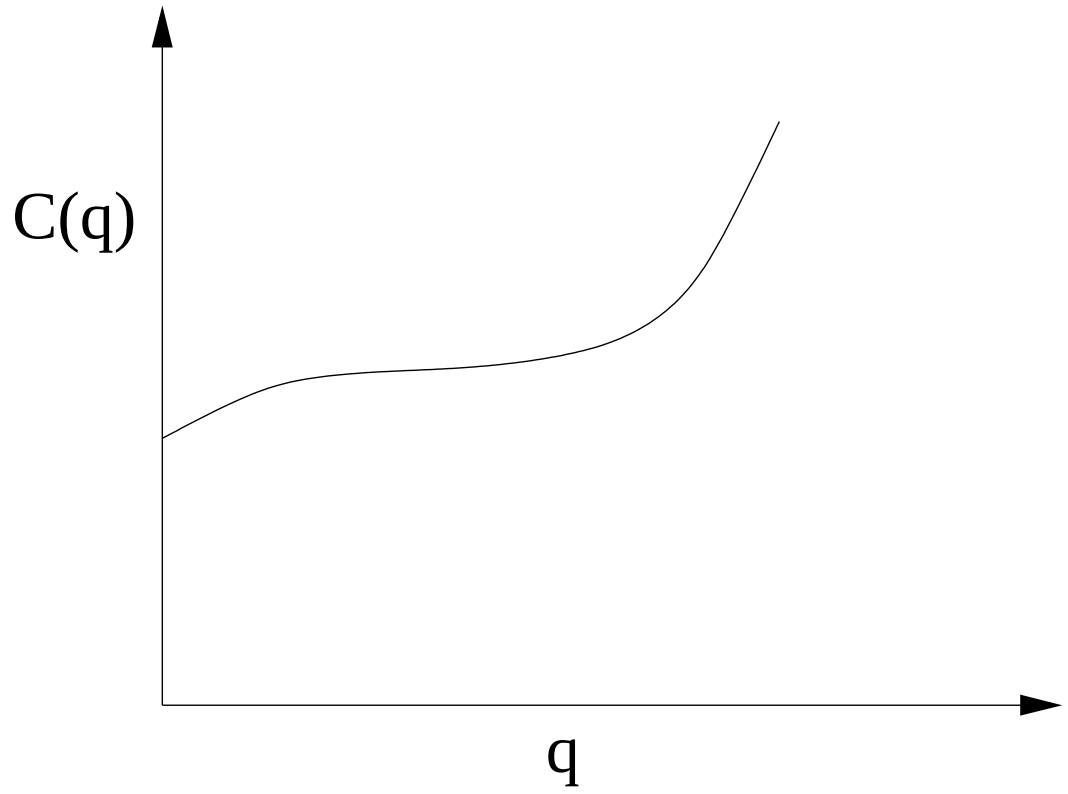
Chapter 4.5: Applications to Marginality

Calculus I

College of the Atlantic. November 10, 2022



1. Indicate the value of q that minimizes marginal cost.
2. Recall that the the average cost to produce q items is $a(q) = C(q)/q$. Indicate the value of q that minimizes average cost. Is it the same q value that minimizes marginal cost?
3. Sketch the marginal cost curve, $C'(q)$.
4. Indicate the q value that maximizes profit. (See the graph on the other side of the page.)
5. Suppose that fixed costs increase, while everything else remains the same. How does this affect the q that maximizes profit? Does this answer make sense?
6. Suppose that the revenue per item increases (and that the revenue curve remains linear). How does this affect the q that maximizes profit? Does this answer make sense?

7. For a certain production level, the marginal cost is \$23.4 and the marginal revenue is \$31.8. Should you increase production?

8. You decide to offer a sightseeing tour of COA's campus for tourists. In your first summer of operation, you learn that if you charge \$7 per person the average demand is about 1000 customers in a week. However, if you decrease the price to \$6 per person, the weekly demand increases to 1200 customers in a week. Assume that the demand curve is linear. Find the per-person price that will maximize your revenue.