Problem 5

Saturday, January 30, 2021 3:02 PM

✓

After incurring a cost of $300 to set up a cafeteria for a day, each meal costs $4 to prepare and serve. If the inverse demand for meals on Sunday is p=9-0.025q , what price and quantity maximize profit, and what is maximum profit? Illustrate with a figure.

$\pi = (9-.025q)q - 4q - 300$

$\frac{d\pi}{dq} = (9-.025q) - .25q - 4$

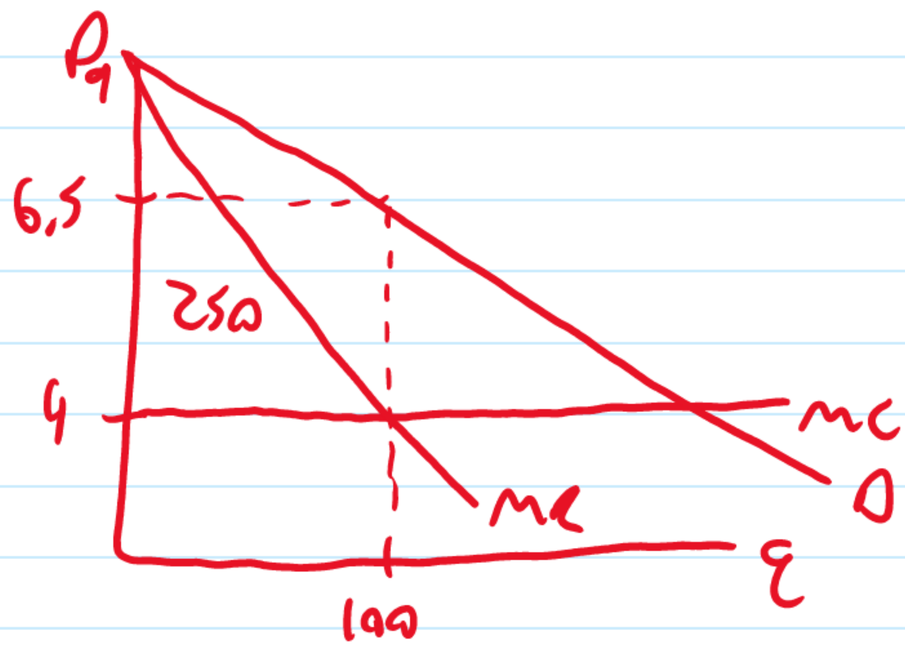
$\frac{d\pi}{dq} = 0 = 9 - .025q - .025q - 4$

$0 = 5 - .05q$

$5 = .05q$

$q = 100$

$q = (9-P)/.025$



$P = 9 - .025(100)$

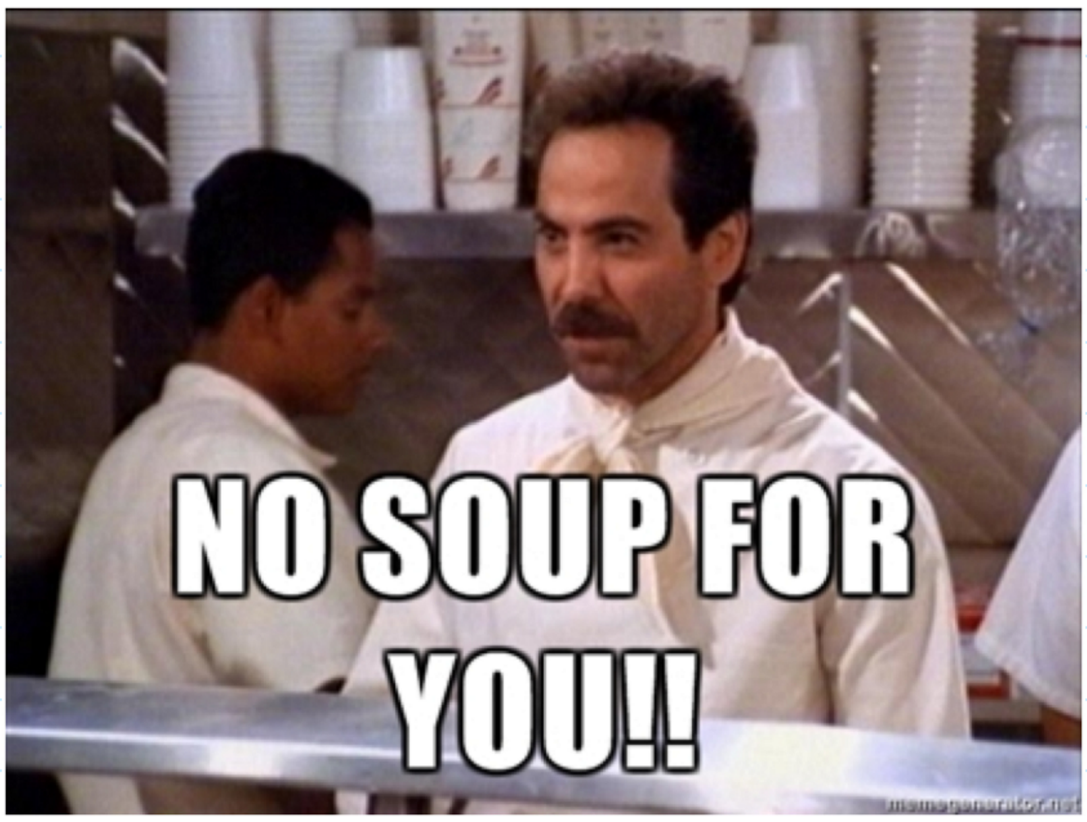
$= 9 - 2.5$

$= 6.5$

$\pi = (6.5 \cdot 100) - (4 \cdot 100) - 300$

$\pi = -50$

↳ profit is negative because it's a soup kitchen and they operate at a loss.



→ because they have no money

← Illustrate with a figure.