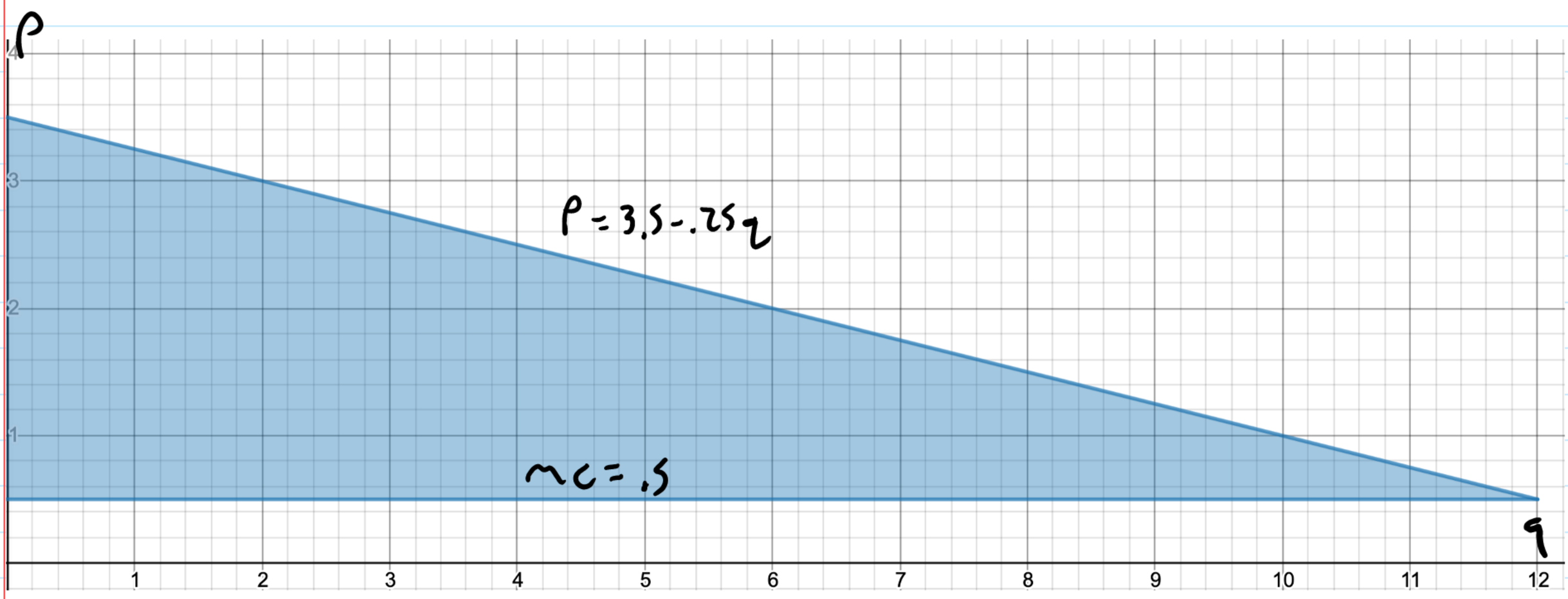
Problem 16

Monday, February 22, 2021 10:00 PM

An individual's inverse demand for a particular beer is p=3.5-0.25q, where q is the number of bottles per period. The marginal cost is $0.5 per bottle.

a) If bottles are sold at marginal cost, what is consumer surplus per consumer?



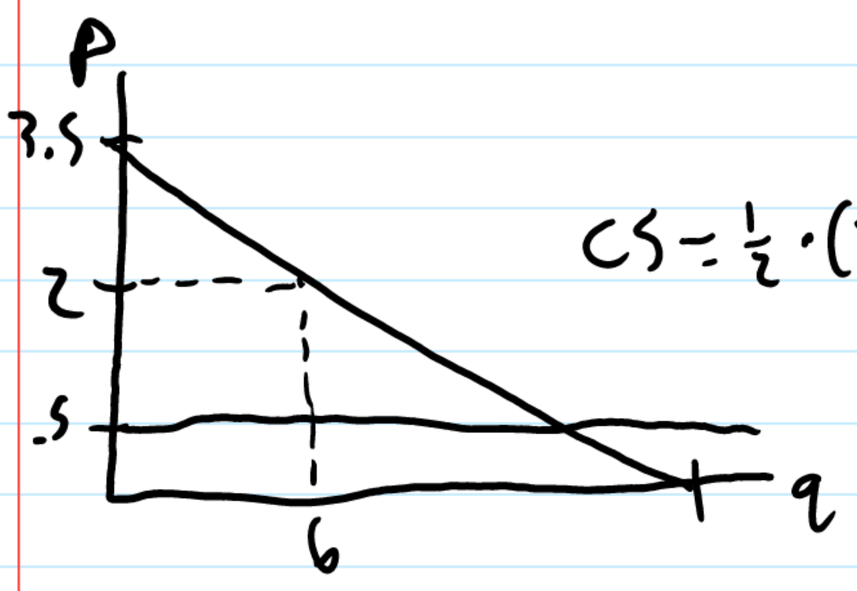
Area = (3.5-.5)·(12)·$\frac{1}{2}$ = 3·12·$\frac{1}{2}$ = 3·6 = 18 → Consumer Surplus

b) If bottles must be sold one at a time at a posted price and the firm maximizes profit, what are profit and consumer surplus per customer?

$\Pi = (3.5-.25q)q - .5q \rightarrow \frac{d\Pi}{dq} = 3 - .5q \rightarrow .5q = 3 \rightarrow q = 6$

$P = 3.5 - (.25 \cdot 6) = 2$

P-MC = 2 - .5 = 1.5 Per Cust



$CS = \frac{1}{2} \cdot (3.5-2) \cdot 6 = \frac{1}{2} \cdot 1.5 \cdot 6 = 4.5$

CS = 4.5

$\Pi = 9$

c) Suppose the firm can sell packages of any number of bottles it chooses and resale is not possible. What number of bottles should be bundled together, and what price should the bundle be sold at, to maximize profit?

MC

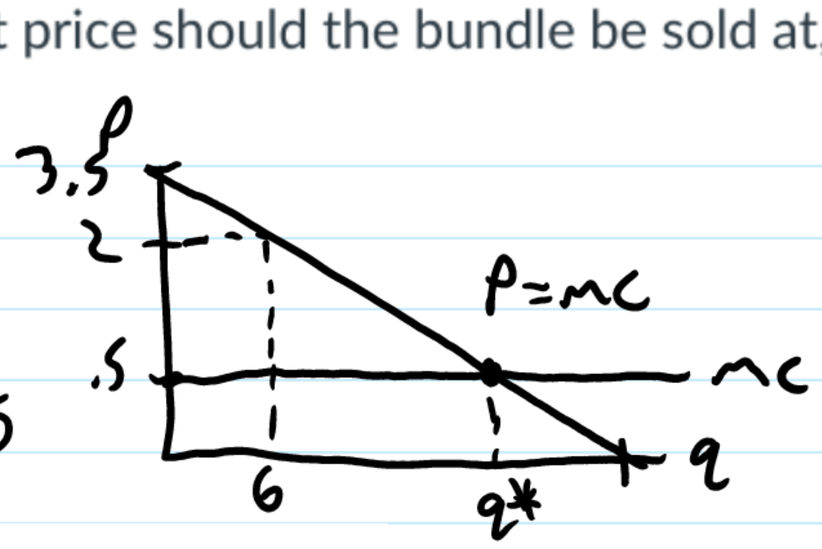
3.5 - .25q = .5

3 = .25q

q = 12

.5·12 + 18 = $24

→ P = 3.5 - .25(12) = 3.5 - 3 = .5



d) Illustrate a-c with a figure.