

**Microeconomics I**

2<sup>st</sup> Mini-test

Year 2012/2013

Name:

Student number:

Class:

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Suppose that Ana Catarina is the only producer of gummy bears in Candyland. To produce her gummies, she faces a cost function of  $TC(Q) = 3Q^2 + 20Q$ .

Demand for gummy bears is  $Q = \frac{40}{3} + \frac{P}{15}$ .

a) Determine Ana Catarina's optimal level of output, price, and profit.

b) Suppose Ana Catarina can perfectly discriminate prices for her customers. How many gummy bears will she sell? At what price? What will be the consumer and producer surplus?

c) The government of Candyland is worried about inequality, and decides to regulate the gummy bear industry. They decide to impose that  $P = AC$ . What will the new equilibrium price & quantity be? What happens to the consumer and producer surplus?

**Solution:**

a)  $\pi = (200 - 15Q)Q - 3Q^2 - 20Q$

FOC:  $\frac{d\pi}{dQ} = 200 - 30Q - 6Q - 20 = 0$

$Q = 5$

$P = 125$

$\pi = 450$

b) Perfect discrimination implies  $P = MC$

$200 - 15Q = 6Q - 20$

$Q = \frac{60}{7} \approx 8.57$

Consumer Surplus = 0

Producer Surplus =  $(200 - 20) * .5 * \frac{60}{7} = 771.429$

Price varies by customer (each customer pays exactly what they're willing to pay, making them indifferent between buying the gummy bears and not buying the gummy bears).

c)  $AC = 3Q + 20 = P$

$\pi = (3Q + 20)Q - 3Q^2 - 20 = 0$

$Q^D = \frac{200 - (3Q + 20)}{15} \Leftrightarrow Q = 10$

$P = 200 - 15 * 10 = 50$

$CS = 750$

$PS = 150$

Graph