

# IN-CLASS ASSIGNMENT: Perfect Competition Long-run

Monday, April 20<sup>th</sup>

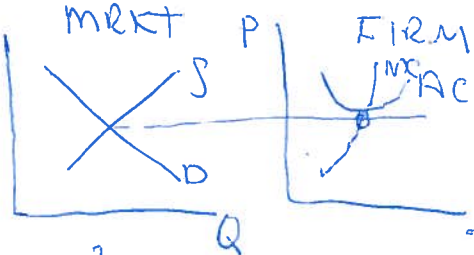
5 points

Name: ANSWER KEY

1. There are 200 firms in the market and each has a cost equal to  $\frac{1}{3}q^3 + 50q + 500$ .

a. What is the long-run equilibrium output per firm,  $q$  and price?

In LR  $P = MC = AC \text{ min}$   
 $MC = q^2 + 50$       $AC = \frac{1}{3}q^2 + 50 + 500/q$   
 $q^2 + 50 = \frac{1}{3}q^2 + 50 + 500/q$   
 $\frac{2}{3}q^2 = \frac{500}{q}$   
 $(q^3)^{1/3} = (750)^{1/3}$   
 $q = 9.08$       $P = MC = 9.08^2 + 50 = 132$



b. Find the number of firms in the long-run if demand is  $Q_D = 5000 - 2P$ .

$$Q_D = 5000 - 2(132)$$

$$Q_D = 4736$$

$$\# \text{ firms} = \frac{4736}{9.08} = 521$$

c. How many firms had to exit/enter to get to the long-run equilibrium?

$$\# 521 - 200 = \underline{321 \text{ firms entered}}$$