

5 points

In-Class Assignment  
November 7th, 2012  
Perfect Competition- Short-Run

5 points

1. Briefly explain how we derive the supply curve. (Hint: The supply curve contains what parts of the MC curve?) (1 point)

The supply curve is the firm's MC curve, not including the downward sloping part of the MC curve, and above the AVC min.

2. Where are the 2 important prices, shut-down price and break-even price, for the firm located? (1 point)

SD price = below AVC min

BE price = AC min

3. If  $C = \frac{1}{3}q^3 + 15q + 300$  and  $MC = q^2 + 15$

a. If the market price is \$130, what is the firm's profit maximizing output? (1 point)

$P = MC$  ;  $130 = q^2 + 15$   
 $\sqrt{115} = \sqrt{q^2}$   
 $q = 10.72$

b. Using your answer from a. and a market price of \$130, what is the firm's total profit? (1 point)

$\pi = Pq - C(q)$   
 $= 130(10.72) - \frac{1}{3}(10.72)^3 - 15(10.72) - 300$   
 $= 1393.6 - 371.44 = \boxed{\$22.16}$

c. At what minimum price will the firm produce a positive profit? (1 point)

$P = AC_{min} = MC$

$AC = \frac{1}{3}q^2 + 15 + \frac{300}{q}$

$q^2 + 15 = \frac{1}{3}q^2 + 15 + \frac{300}{q}$

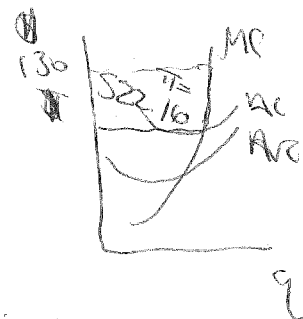
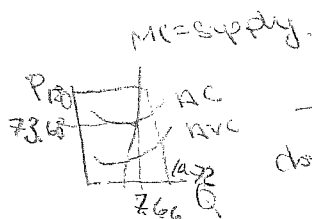
$\frac{2}{3}q^2 = \frac{300}{q}$

$(q^3)^{\frac{1}{3}} = 300 \left(\frac{3}{2}\right) = (450)^{\frac{1}{3}}$

$q = 7.66$

$MC = P$

$P = (7.66)^2 + 15 = \boxed{73.68}$



verify  $\pi = 0$   
 $Pq - C = 0$