**Perfect Competition and Monopoly Problems**

**#1:**

Long-run average total cost = 240 – 6Q + 0.08Q2

Calculate the level of output when the average cost reaches a minimum:

When the average cost is minimized, its derivative is equal to zero. Therefore:

△ATC/△Q =0

-6 + 0.16Q = 0

0.16Q = 6

Q = 37.5 Units

Substitute in the ATC function to derive the long-run price:

240 – 6Q + 0.08Q^2 = 240 – 6(37.5) + 0.08(37.5)^2 = 127.5

The long-run price = 127.5

**#2:**

Q = 5000 – 250P ( 2500\*0.8

Therefore, no. of drinks sold = 300 = 2300 Total revenue = Quantity \* Price = 3000 \* 0.8 = 2400

Total Profit = Revenue – Cost = 2400 – 2300 = $ 100