Second Quiz

5 points for each question, 25 points total. – 1 for messiness.

1. *Swimming Test.* Suppose there is a neighborhood of 10,000 children. 8,000 of them know how to swim and 2,000 do not. The neighborhood is served by a municipal swimming pool which charges a $5 per day entrance fee. $5 is equal to the average cost of serving 10,000 children of whom 80% know how to swim and 20% do not.

An independent swim club builds a new pool in the neighborhood. It saves money on lifeguards by requiring all children to pass a swimming test before they can enter the pool. It charges $4 per day, and all 8,000 children who know how to swim start going there. The club is run on a non-profit basis, so $4 is equal to the average cost of serving 8,000 children of whom 100% know how to swim.

After the club opens, the municipal pool can no longer cover its costs, and the city shuts it down.

(a) Draw a diagram of the initial situation, showing a standard U-shaped average cost curve and the demand curve, and labeling the price and quantity. Draw it so demand crosses AC on the upward-sloping part of the U. Now draw the U-shaped AC curve of a pool serving ½ the quantity, drawing it so that having just one pool is less costly when q = 10,000.

(b) With reference to the graph, explain why the municipal pool had to close down.

(c) Would there be a legitimate public reason for prohibiting the pool club from starting up? Again explain with reference to the graph.
(d) Suppose that after the club entered, the municipal pool stayed open and both pools stopped charging average cost and instead moved to Cournot competition. Using a reaction function diagram, explain which is more likely to be the Cournot equilibrium: each pool serves 5,000 children, or each pool serves 2,500 children.