

ECON 224, Prof. Hogendorn, Spring 2010

Second Quiz

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

1. *SwimmingTest*. 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 $\frac{1}{2}$ 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.