

Econ 100B (Grossman)—Winter 2010
Midterm 1—Version A
January 26, 2010

Instructions: This is a closed-book, closed-notes exam. No calculators or electronic devices are allowed. Please turn off and put away all phones and other electronic devices. Write your name, perm number, version (A, B, C, or D), and your TA's name on both your Scantron sheet and your bluebook. There are 10 multiple-choice questions and two blue-book questions. Answer as many as you can in the time allowed. I do not expect everyone to be able to answer all questions. If you get stuck on something, I suggest moving on and coming back later when/if you have time. If you have a question, please raise your hand. Good luck!

Multiple choice – 30 out of 50 points (10 questions, 3 points each)

1. Simba's demand curve for good x is $x = 100 - 2p$. What is the price-elasticity of demand when $p = 40$?
 - (a) 2
 - (b) -4
 - (c) -1/2
 - (d) 4
2. Emmon has \$64. He walks into a casino and sees the menu of bets available to him. If his utility over wealth is given by $U(c) = \sqrt{c}$, which of these choices will maximize his expected utility?
 - (a) Pay all his money (\$64) for a 30% chance to win back \$400
 - (b) Flip a (fair) coin. Heads \rightarrow win \$36; tails \rightarrow lose \$15
 - (c) Pay all his money (\$64) for a 70% chance to win \$100
 - (d) Reject all of the above gambles (and keep his \$64)
3. Ruth has inverse demand for wine given by $p = 100 - q$. If the price of wine changes from \$20 to \$40, how does her (net) consumer surplus change?
 - (a) It decreases by \$6800
 - (b) It decreases by \$1400
 - (c) It increases by \$4600
 - (d) It increases by \$1400
4. Luyin's demand for tangerines is $D(p, m) = 4 - 2p + \frac{m}{10}$, where p is the price of tangerines and m is her income. If $p = 1$ and $m = 100$, what is her *income*-elasticity of demand?
 - (a) -5/6
 - (b) 1/6
 - (c) -1/6
 - (d) 5/6
 - (e) 1/10

5. Amir's inverse demand for cheese is given by $p = 4 - q/5$ and Azam's inverse demand for cheese is $p = 4 - q/10$. What price will maximize the total revenue generated from selling cheese to these two consumers?
- 2
 - 4
 - 5
 - $4/3$
 - 10
6. Frida sold cheese for \$5 (per pound). She raised her price by a little bit and her revenue increased. Which of the following could possibly be the correct demand function for her cheese?
- $q = 20 - 2p$
 - $q = 24 - 2p$
 - $q = 32 - 4p$
 - $q = 35 - 5p$
7. What is the equilibrium price and quantity of cake if the inverse demand is $p = 20 - q/5$ and supply is $q = 10 + 5p$?
- $(p, q) = (6, 50)$
 - $(p, q) = (9, 55)$
 - $(p, q) = (5, 35)$
 - $(p, q) = (7, 30)$
8. (continued from previous question) Suppose the government makes it illegal to sell cake for a price above 8 dollars. To avoid shortages, it agrees to pay bakers enough of a subsidy for each cake so as to make supply equal demand. How much would the cake subsidy have to be?
- $s = 1$
 - $s = 2$
 - $s = 3$
 - $s = 4$
9. The inverse demand for iPhones is $p = 200 - 5q$ and inverse supply is $p = 20 + 4q$. A tax of \$45 is introduced on each iPhone. The number of iPhones sold falls. By how much?
- 5
 - 20
 - 15
 - 9
10. A 5 dollar tax is imposed on guitars, which lowers the quantity bought and sold from 63 to 43 and increases the price that buyers pay by 3 dollars. The deadweight loss of this tax is
- 60
 - 100
 - 30
 - 50

Blue-book – 20 points (2 questions, 10 points each)

1. You rent a room with a nice ocean view in a house on Del Playa. Last week's storms severely eroded the sea cliffs and your friend (the engineering major) estimates that there is a 50% chance that they will collapse and you will lose *all* of your possessions, valued at \$100. You can sell off some of your belongings to buy some insurance against this risk, for the price of p dollars for every dollar of insurance.
 - (a) Let c_c denote your wealth if the cliffs collapse and c_{nc} denote your wealth if they do not collapse. Write the equation of your state-contingent budget constraint, with c_{nc} alone on the left-hand side of the equation.
 - (b) If your utility of wealth is given by $u(c) = \sqrt{c}$, what is your *MRS*? (Express your answer as if c_{nc} is on the y -axis.)
 - (c) Write down a condition that characterizes the optimal consumption bundle, i.e. that you could use to solve for (c_{nc}^*, c_c^*) . How much should you spend on insurance when $p = .5$?
 - (d) Now suppose that your utility of wealth is given by $u(c) = c$. Write your new *MRS*. How much insurance would you buy if $p = .4$? If $p = .6$?
 - (e) Explain what is interesting about your answer to the previous part, and why it happens.

2. The inverse demand function for monster burritos at Freebirds is $p = 35 - \frac{q}{4}$ and the supply function is $q = 20p - 100$.
 - (a) What is the equilibrium price and quantity?
 - (b) What is the consumer surplus, producer surplus and total welfare?
 - (c) The city has wants to reduce the number of people that go to Freebirds after 2am and considers a tax of \$15 per burrito. In the new equilibrium, how would consumers have to pay for a burrito, how many would they buy, and how would this affect total welfare?
 - (d) Suppose that instead of a tax, the city is considering a price floor. At what level should it set the price floor to achieve the same quantity as the tax? How does the total welfare from the price floor compare to that from the tax?
 - (e) If the Freebirds had to choose between the tax and the price floor, which would they choose? What about the consumers?