

ECON 110, Prof. Hogendorn, Spring 2009

First Midterm Exam

Each part of each question (a, b, c, etc.) is worth 5 points. Make sure to allot your time accordingly. Total of 35 points, -1 for messiness, -2 for extreme messiness.

1. *GoogleStock*. Google stock recently closed at \$338 per share. There are 315.29 million shares of Google stock outstanding. Net profit (or “earnings”) were \$4,226.86 million for 2008.
 - (a) What is the market value of Google? What is the EPS (earnings per share)? What is the price/earnings ratio?
 - (b) Suppose you know that all market analysts agree that the proper discount rate for Google’s earnings is 10%. Which of the following is the most plausible estimate of the next three year’s earnings for Google, given the information about the stock price? Explain.
 - i. \$6,000 million in 2009, \$9,000 million in 2010, and \$15,000 million in 2011
 - ii. \$4,800 million in 2009, \$5,400 million in 2010, and \$6,200 million in 2011

2. *Lawns.* Grass lawns create a variety of negative externalities, including air and noise pollution from mowing, herbicide and pesticide pollution, water scarcity from irrigation, and destruction of woody plants and shrubs that provide better wildlife habitat and carbon sequestration. The average American household spends around \$1200 per year on lawn care (obviously this varies enormously by household, but that's the average). Again using an average, there is about 1/3 acre of lawn per household (lawns are America's biggest and most polluting agricultural "crop").
- Use the data point of price equals \$1.2 thousands and quantity equals 0.33, and suppose that the (private) price elasticity of demand for lawn is $|\varepsilon| = 1.5$. What is a back-of-the-envelope linear demand curve for lawns? (Let $p = 1.2$, this problem is easier in thousands.)
 - Let the supply curve for lawns (really for lawn care products and services) be $s(p) = 0.25 + 0.067p$. What is the equilibrium price, quantity, consumer, and producer surplus from lawns?
 - Suppose that the negative externalities from lawn *consumption* add up to \$400 per acre. What is the social demand curve $q_s(p)$?
 - What is the social equilibrium? How much deadweight loss is there? Calculate numerically and show on a graph.
 - If the government administered a Pigouvian tax by making each household pay \$400 per acre of lawn, how much tax revenue would be generated? Calculate numerically and show on a graph.