ECON 301, Professor Hogendorn, Spring 2015

Second Midterm Exam

Each part of a question (a, b, c, etc.) is worth 5 points. Make sure to allot your time accordingly. Total of 25 points +1 bonus point. −1 for messiness, −2 for extreme messines.

Please write on one side of the blue book pages. When you are finished, please keep the exam sheet and hand in your blue book. Thanks.

1. *Biofuel.* In the United States, the Federal Government gives has periodically given "blenders' credits" to fuel companies that blend biofuels into their pretroleum-based gasoline or diesel. The blenders' credit is a subsidy that goes to buyers of biofuel, so within the biofuel market it should be viewed as a per-unit subsidy to consumers. To model this, let demand and supply be

$$x(p) = a - b(p - g) \qquad s(p) = \alpha p$$

   where *a*, *b*, and α are parameters, *p* is price in cents per gallon, and *g* represents the blenders' credit.

   (a) Show demand and supply curves (with and without the subdidy) and the deadweight loss on a graph.

   (b) Find a formula for how much the government pays out in equilibrium (call this R). Use the derivative dR/dg to discuss how the government payout changes as *g* changes.

   (c) (*Bonus + 1 point.*) What is the *elasticity* of the government payout with respect to the subsidy?

2. *Catfood.* The game company PONOS has a monopoly over cat-food, an in-game money in the game Battle Cats. Those who become addicted to Battle Cats very much want catfood, and there is no substitute. The current price of catfood is 3.3 (cents) per unit. The marginal cost of producing catfood is 0, which of course is the great advantage of in-game currencies and items.

   (a) Let the linear demand for catfood have choke price 25. Draw the demand curve, marginal revenue curve, marginal cost curve, profit maximizing price and and quantity. What rectangle represents PONOS's profit?

   (b) At equilibrium, is the demand for catfood elastic or inelastic? How do you know?

   (c) Assuming the price of 3.3 cents is the monopoly profit maximizing price, what is the equation for the demand curve?