

# Econ 101, Final, Fall 2006.

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**Instructions.** You have 3 hours to complete the exam. There are 70 points available. Please write your responses on the exam itself in the space provided. If you require additional space, write on the back of the page. You may refer only to your own handwritten, “cheat sheets”. (A maximum of 3 sheets) Calculators and all other references materials are *not* allowed. If a question asks for a numeric quantity you may leave your answer in expression form for full credit. (e.g.  $\frac{40-30}{5}$  would be perfectly acceptable in place of “2”.) Be sure to label any diagrams you draw, to show your work and to explain your reasoning. You may keep your cheat sheets. Thank you and good luck!

**Name:**

**Pledge:**

SHORT ANSWER. (20 Points)

1. (2 points) If the price of a product rises, what happens to the demand curve for that product?
  - (a) It increases / shifts to the left.
  - (b) It increases / shifts to the right.
  - (c) It decreases / shifts to the left.
  - (d) It decreases / shifts to the right.
  - (e) It does not change.
  
2. (3 points) Some medical authorities announced in the late 1980s that an acne medicine named Retin-A also had previously unknown wrinkle-reducing properties. An economist would expect to find that, after this announcement, the price of Retin-A \_\_\_\_\_ and the quantity sold \_\_\_\_\_.
  - (a) rose; fell
  - (b) rose; rose
  - (c) fell; fell
  - (d) fell; rose
  
3. (2 points) In order for a natural monopoly to develop, it
  - (a) is important that the firm be very large.
  - (b) is important that the firm prices its product below cost.
  - (c) must have large fixed costs relative to the total market demand.
  - (d) must be in the presence of government intervention.
  
4. (3 points) For a single price monopoly, the profit maximizing price will be \_\_\_\_\_ than marginal revenue and \_\_\_\_\_ than marginal cost.
  - (a) greater; greater
  - (b) greater; less
  - (c) less; greater
  - (d) less; less

5. (3 points) Define *Marginal Rate of Substitution* from consumer theory.
6. (5 Points) Paul and Carol face the same prices for pizza and beer. Paul drinks 5 beers per week and eats 5 pizzas. Carol drinks 15 beers per week and eats 3 pizzas. Is Paul's Marginal Rate of Substitution of Pizza for Beer greater than , less than or equal to Carol's. Explain.
7. (2 Points) A firm's technology has *constant returns to scale*. Describe the shape of its *long run marginal cost curve*.

8. (35 Points) ANALYZE THE CITRUS MARKET.

(a) (4 Points) Suppose that an acre of land with mature orange trees on it will produce a steady harvest of 100 boxes of oranges per year forever. At current market prices of oranges of \$5 per box and interest rate at 5%, what is  $V_m$ , the value of an acre of mature trees to an orange grower?

(b) (5 Points) Suppose that it takes 5 years to grow mature trees on cleared land before which they produce no oranges and after which they produce 100 boxes per acre. To an orange grower, what is  $V_c$ , the value of an acre of cleared land? (You may express your answer in terms of  $V_m$ .)

(c) (6 Points)  $V_h$  is the price per acre that housing developers are offering for land. Wilma and Frances are two orange growers. Frances owns a grove with mature orange trees. Wilma owns a plot of cleared land. For each case below describe how many oranges Wilma and Frances will produce (per acre) in the long run?

i.  $V_h < V_c$ .

ii.  $V_c < V_h < V_m$ .

iii.  $V_c < V_m < V_h$ .

(d) (10 Points) Taking a clue from the previous questions, discuss the effect hurricanes have on the supply of oranges. Do they represent a shift in a long run supply curve or a short run supply curve? Are the effects temporary or permanent? What does it depend on? If you answered “they shift short run supply but effect can sometimes be permanent” (the right answer), how do you explain the apparent inconsistency?

(e) (10 Points) Here is quote from the NYT article on the citrus crop. “But, last Fall, with the grapefruit crop down substantially, consumer demand for grapefruit juice plummeted by as much as 30 percent after prices increased 20 percent or more.”

i. Does the event referred to in the quote represent a shift in supply or demand?

ii. What is elasticity of demand for grapefruit juice?

9. A GAS TAX. (15 Points) The production and consumption of gasoline has many negative side effects whose costs are paid neither by producers or consumers of gasoline. Assume that every gallon has a marginal external cost of \$2 and that it does not matter how the gasoline is produced or consumed.
- (a) (5 Points) Draw a diagram showing an efficient gasoline tax.
  - (b) (2 Points) Label an area in your diagram indicating the *loss in consumer surplus* resulting from the tax.
  - (c) (3 Points) Label the net social welfare change. Is it a net gain or loss?
  - (d) (5 Points) Explain the importance of the assumption that it does not matter how the gasoline is produce or consumed.