ECON 001
Spring 2019
Midterm 1
February 19, 2019
Time Limit: 60 Minutes

Name (Print): _____

Recitation Section: _____

Name of TA: _____

- This exam contains 7 pages (including this cover page) and 10 questions. Check to see if any pages are missing.
- The exam is scheduled for 1 hour.
- This is a closed-book, closed-note, no calculator exam.
- Answer each multiple choice question by writing the correct answer on the line at the right margin of the corresponding question. Make sure that your answer is clearly written or it will be marked incorrect.
- Write your answers to the other questions in the spaces provided below them. If you don't have enough space, continue on the back of the page and state clearly that you have done so.
- Do not remove any pages or add any pages. No additional paper is supplied
- Show your work when applicable. Use diagrams where appropriate and label all diagrams carefully.
- You must use a pen instead of a pencil to be eligible for remarking.
- This exam is given under the rules of Penn's Honor system.

My signature certifies that I have complied with the University of Pennsylvania's Code of Academic Integrity in completing this examination.

Please sign here _____ Date _____

Question	Maximum	Grade
MC (Q1-8)	35	
1st SA (Q9)	30	
2nd SA (Q10)	35	
Total	100	

Multiple Choice Questions (best 7 out of 8: 35 points)

1. (5 points) Aiden bought tickets to attend a broadway play for $100 and values it at $300. Upon hearing one of his closest friends is going to be home for the break, he is debating whether to go home or not. If he cancels his theater ticket at least one week in advance, he will get a refund of $60, but if he cancels it less than a week in advance, he will get no refund. Suppose his benefit from going home is $200, and the cost of traveling back home is $250. Which option has the lowest opportunity cost?

   A. Cancel the ticket one week in advance and go home
   B. Cancel the ticket the previous day and go home
   C. Attend the play
   D. All three options have the same opportunity cost

   1. _____

2. (5 points) Suppose the market for gasoline in the United States is characterized by a downward sloping linear demand curve and an upward sloping linear supply curve. At the initial equilibrium, market demand is price inelastic. There is an oil discovery in the Gulf of Mexico. Which of the following is true about the new equilibrium compared to the initial one?

   A. Equilibrium price and quantity decrease
   B. Consumers now buy more gas at higher prices
   C. Total revenue of oil producers decreases
   D. Total revenue of oil producers increases

   2. _____

3. (5 points) Consider the market for eggs. Suppose that the demand curve is downward sloping and the supply curve is upward sloping. The mechanization of poultry farms sharply reduces the cost of producing eggs. At the same time, a more health-conscious population changes its eating habits and tends to avoid eggs. Which of the following statements *could be true*?

   I. Both equilibrium price and quantity increase.
   II. Both equilibrium price and quantity decrease.
   III. Equilibrium price increases, but quantity decreases.
   IV. Equilibrium price decreases, but quantity increases.

   A. I. only
   B. II. only
   C. III. only
   D. IV. only
   E. I. and III.
   F. II. and IV.
   G. None

   3. _____

4. (5 points) Suppose that ice cream and frozen yogurt are perfect substitutes to Ryan. Currently, he consumes 1 ice cream and no frozen yogurt. He receives a coupon for one free frozen yogurt. The coupon cannot be traded and can only be used for the consumption of one frozen yogurt. Which of the following is his new optimal bundle?

   A. 2 ice cream, 0 frozen yogurt
   B. 1 ice cream, 1 frozen yogurt
   C. 0 ice cream, 2 frozen yogurt
   D. 2 ice cream, 1 frozen yogurt

   4. _____

5. (5 points) Suppose that for Catherine, cookies and milk are perfect complements such that for every cookie she eats, she must drink one glass of milk. Assume that the price of a single glass of milk is \$2, and Catherine is currently consuming 2 glasses of milk, which is optimal given her income of \$10. Given this information, how many cookies does Catherine consume, and what is the price of a single cookie?

   A. Catherine consumes 1 cookie and the price of a single cookie is \$6
   B. Catherine consumes 2 cookies and the price of a single cookie is \$3
   C. Catherine consumes 1 cookie and the price of a single cookie is \$3
   D. Catherine consumes 2 cookies and the price of a single cookie is \$6
   E. Not enough information to determine

   5. _____

6. (5 points) In an economy with two goods, apples and oranges, which of the following is always true?

   A. The income elasticity of demand for either apples or oranges is positive
   B. The cross-price elasticity of one good for the other is positive
   C. Apples and oranges are complements
   D. Either apples or oranges is inferior

   6. _____

7. (5 points) A perfectly competitive firm has total costs $TC = 10q^2 + 2q$ and marginal costs $MC = 20q + 2$. What is the difference in the firm's break-even and shutdown prices?

   A. \$6
   B. \$2
   C. \$0
   D. None of the above

   7. _____

8. (5 points) Jim is a florist who competes in a perfectly competitive flower market. The price of fertilizer, which represents a variable cost, increases. Which of the following is a result of this change?

   A. Jim's shut down price decreases
   B. Jim's short run supply curve increases
   C. Jim's total costs decrease
   D. None of the above

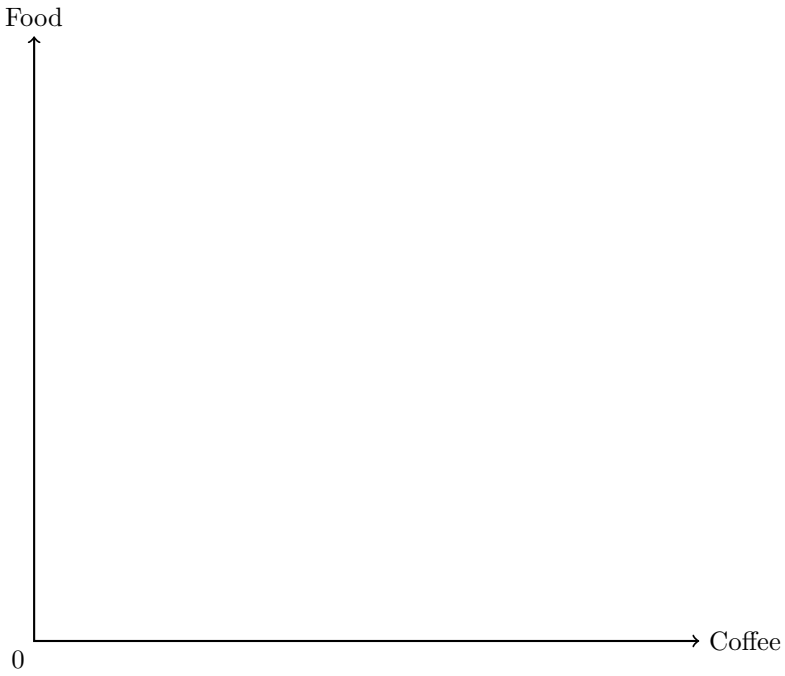
   8. _____

Short Answer Questions (65 points total)

To get any point you must show your work

9. Adriel has a weekly budget of \$100 that she spends on food and coffee. The price of coffee is \$2, and the price of food is \$4.

   (a) In the graph below, draw Adriel's budget constraint BC (labeling all intercepts), with coffee on the x-axis and food on the y-axis.



   (b) Suppose that given his budget constraint, he decides to consume 15 units of food. In the graph from part (a), label the optimal consumption point A and draw a typical indifference curve IC consistent with this fact.

   (c) Suppose the price of coffee falls to \$1. Draw the new budget constraint BC' in the graph from part (a) (labeling all intercepts).

   (d) After the price change, Adriel still consumes 15 units of food. Label the new consumption point B in the graph from part (a).

(e) Given that food consumption remains the same after the decrease in the price of coffee, what are the directions of the substitution effect and of the income effect on his food consumption? Is food a normal good or an inferior good? Explain.

(f) What is the price elasticity of Adriel's demand for coffee between the prices \$1 and \$2? Is his demand for coffee elastic, inelastic, or unit-elastic?

(g) Assuming that Adriel's demand for coffee is linear, calculate his *gain* in consumer surplus from the decrease in the price of coffee from \$2 to \$1. *You can draw his demand for coffee if it helps but it is not required.*

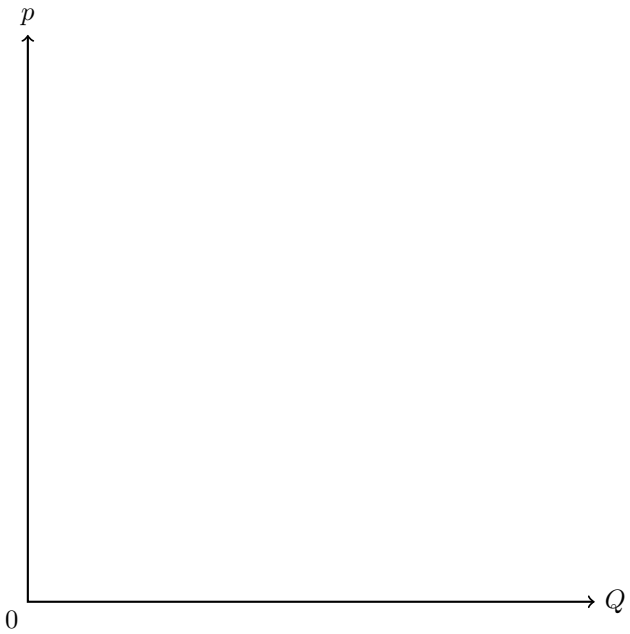
10. The market for coffee at Penn has only two firms; one run by Amy and the other run by Bob. Both firms are perfectly competitive. Amy has variable costs $VC_A = 2q^2$ and marginal cost $MC_A = 4q$, and Bob has variable costs $VC_B = 4q^2$ and marginal cost $MC_B = 8q$ where q is the number of cups of coffee that are sold. Both firms pay \$5 in rent, which is considered sunk.

    (a) Find Amy's and Bob's shut down prices, P_A^{SD} and P_B^{SD}, respectively.

    (b) Using your answers to part (a), write the equations for Amy's short run supply curve (q_A^S as a function of the market price P) and Bob's short run supply curve (q_B^S as a function of the market price P).

    (c) Find the market supply curve equation (Q_S as a function of the market price P).

(d) Suppose the market demand is given by $Q^D = 14 - \frac{1}{2}P$. On the graph below, draw the market supply and market demand (label all intercepts), solve for the equilibrium price and quantity, and label them on the graph.



(e) Given the market equilibrium price you found in part (d), find Amy's and Bob's profit maximizing outputs, q_A^* and q_B^*, respectively.

(f) Calculate Amy's and Bob's maximum profits, π_A^* and π_B^*, respectively.

(g) Suppose that the firms' landlords increase the rent they charge Amy and Bob. Explain *in words* the impact on their individual short-run supply curves, as well as on market supply, equilibrium price and quantity, and firms' profits.