ECON 360: Intermediate Microeconomics

Midterm Exam, Summer 2025

- Define any variables you need to answer the problems.
- All materials except for your cheat sheet should be put away before beginning the exam. Use of cell phones during the exam for any purpose is forbidden.
- Please write your answers in the space provided.
- Keep your answers short but clear. Your goal is to convince a skeptical grader that you understand the relevant concepts well enough to answer the question you are given.
- The questions on the exam sum to 62 points. Your cheat sheet is worth up to 6 points, for a total possible points of 68 on this exam.
- Remember to turn in your cheat sheet with your exam.
- Good luck on your Econ test!

1. (4 points) What is your name?

1 True/False Questions

Indicate "T"rue or "F"alse for each of the following statements or claims. For each false statement, if you correctly and clearly explain why it is false, I will give you a bonus point. No explanations necessary for claims or statements. which you think are true.

2. (2 points) Billy likes both ice cream sandwiches and orange juice. Billy's marginal utility of orange juice is always positive. For ice cream sandwiches, if Billy has eaten 3 or fewer ice cream sandwiches than Billy gains utility by eating an extra ice cream sandwich. After the fourth ice cream sandwich however, Billy will feel worse as he eats additional ice cream sandwiches and therefore his utility will decrease. **Claim**: Based on what we have learned in class Billy's preferences are well-behaved.

3. (2 points) Aaron loves Chinese candy and so imports the candy every month. After the United States decides to impose a 145% tariff on Chinese candy, the price Aaron pays to import the candy also increases by 145%. The month after the price increase goes into effect, Aaron continues to purchase the Chinese candy. **Claim**: Based on what we have learned in class, and assuming Aaron is behaving rationally, Aaron's consumer surplus from buying the Chinese candy became negative after the price increase.

4. (2 points) Suppose Cliff and Iman are friends, and there are two goods x_1 and x_2. Cliff has decided that no matter how much of x_1 and x_2 he has he will be perfectly happy because he has Iman as his friend, so Cliff's utility is 100 regardless of how much x_1 and x_2 Cliff has. Iman's utility is given by the equation $U_I(x_1, x_2) = x_1^2 x_2^2$. **Claim**: If Cliff and Iman are rational, and the total endowment of good 1 is 10 and the total endowment of good 2 is 5, then the bundle that will maximize total utility is for Iman to consume the bundle (5,5) and for Cliff to consume the remaining 5 units of good 1.

5. (2 points) Suppose both people involved in a trade with two goods have well-behaved preferences over those two goods. **Claim**: If the endowment point lies in the interior of the Edgeworth Box (i.e. both people have some positive endowment of both goods) then the Pareto Optimal point will also be in the interior of the Edgeworth Box.

6. (2 points) Suppose that you are exactly indifferent between Coke and Pepsi, and so you are always willing to trade 1 Coke for 1 Pepsi. Also suppose the prices of Coke and Pepsi are the same. **Claim**: For a given amount of money w there is 1 bundle of Coke and Pepsi that maximizes your utility.

2 Multiple Choice Questions

Circle the best answer to each question. There is only one answer for each question. No explanation necessary.

7. (2 points) Suppose that Bill is trying to figure out what to do with his Friday night in Binghamton during the middle of the summer semester. Using the internet, Bill discovers that his options are 1. Rumbleponies baseball game, 2. First-Friday art show in downtown Binghamton, and 3. Greek Festival in Vestal. Given these choices Bill decides he prefer to go the Rumbleponies baseball game. After doing some more searching Bill also finds out that they are running trivia at Craft (a downtown restaurant) open to everyone. Assume that Bill can afford any of these four options both in terms of time and money. **Question**: Which option, should Bill decide he now prefers after finding out about trivia at Craft, violate rational maximizing behavior as we have learned it in class?

    A. Trivia at Craft.

    B. Rumbleponies baseball game.

    C. Greek Festival in Vestal.

    D. We do not have enough information.

8. (2 points) Darcy is trying to decide if she has solved her optimization problem correctly regarding the number of packs of healthy snacks and the number of packs of unhealthy snacks to buy from Target. She currently has 10 packs of healthy snacks and 2 packs of unhealthy snacks in her Target cart. At this bundle if she adds another pack of healthy snacks her utility will increase by 1 and if she adds another pack of unhealthy snacks her utility will increase by 5. The price of healthy snacks is twice as expensive as the price of unhealthy snacks. Based on what we have learned in class, how should Darcy adjust the number of healthy and unhealthy snacks in her cart?

    A. Darcy should increase the number of unhealthy snacks and decrease the number of healthy snacks.

    B. Darcy should decrease the number of unhealthy snacks and increase the number of healthy snacks.

    C. Darcy should not adjust her cart in any way.

    D. We need more information in order to answer the question.

9. (2 points) Anushka figures out that when the prices of hats and tshirts are \$10 and \$15, respectively, the bundle that maximizes her utility when she has \$60 is 3 hats and 2 tshirts. Her utility of hats and tshirts can be represented as the function $U = ht$ where h represents the number of hats and t represents the number of tshirts. When she returns to the store, she finds that the prices of tshirts and hats have tripled. She now has \$180 to spend at the store. Which bundle would Anushka purchase at the new prices?

    A. 9 hats, 6 tshirts.

    B. 6 hats, 9 tshirts.

    C. 3 hats, 2 tshirts.

    D. 2 hats, 3 tshirts.

10. (2 points) Suppose you are talking to a friend who is really into video and board games. This friend is also a college student, and is telling you how they would actually buy fewer board games if they had a higher income because they really would rather spend the money on video games instead. If the price of board games increased, this friend would also buy more board games. This is because your friend's income is quite low, and so a price increase in board games means the friend would have to buy fewer video games and more board games in order to maintain a high number of total games in the house. Based on what we have learned in class, which option best describes how we would classify board games according to your friends description?

    A. Ordinary and normal.

    B. Ordinary and inferior.

    C. Giffen and normal.

    D. Giffen and inferior.

11. (2 points) Ghadeer purchases wireless internet and streaming services (Netflix, HBO Max, Hulu, and Disney+) for her apartment. When the price of her wireless internet goes up, Ghadeer decides to cancel her Netflix subscription. When the price of her wireless internet increases further, she also cancels her Hulu subscription. Based on what we have learned in class which option best describes the relationship between wireless internet and streaming services for Ghadeer?

    A. Complements.

    B. Substitutes.

    C. Perfect Complements.

    D. Perfect Substitutes.

3 Short Answer Questions

These questions all require an explanation. Remember you are trying to convince me you understand the why and the how of what you are doing, not simply getting the answer correct. Cite specific concepts from class in your answers for full credit.

12. **Trading in Madagascar**. Suppose that Marty the zebra and Alex the lion find themselves stranded on the island of Madagascar after falling off their boat and are trying to survive on the island. To make it simple, suppose the only two items they care about are bushels of grass and steaks, as there is a source of drinking water nearby. Marty and Alex decide to split up and see what else they can find on the island. Marty returns with 4 bushels of grass and 6 steaks and Alex returns with 7 bushels of grass and 10 steaks.

    (a) (6 points) Draw an Edgeworth Box representing all the feasible allocations of bushels of grass and steaks between Marty and Alex considering the grass and steak they found on the island. Be sure to label your axes, the origin points, and the endowment point. For full credit, I must be able to tell with either tick marks or the written coordinate of your endowment point.

(b) (4 points) Now let's think about each animal's preferences. Marty does not eat steak, so his utility only depends on the number of bushels of grass he consumes. Alex only consumes steak, so Alex only cares about the number of steaks he consumes. That is to say the marginal utility of grass to Alex is 0, and the marginal utility of steak to Marty is also 0. Write down 1 utility function that could represent Marty's preferences, and 1 utility function that could represent Alex's preferences. Explain how your function represents each animal's preferences.

(c) (6 points) On your Edgeworth Box from part a, draw at least 2 indifference curves for Marty and 2 indifference curves for Alex. 1 of your indifference curves for each animal must pass through the endowment point. Be sure to label which indifference curves are for which animal.

(d) (6 points) Find the Pareto Optimal amount of bushels of grass and steak for Marty and Alex. Be sure to explain your answer and label/indicate the Pareto Optimal point on your Edgeworth Box.

13. **What Courses to Take?** Zoya is trying to decide which classes she should take in the Fall of her senior year. She has fufilled all her requirements for both her major and other graduation requirements besides electives, and any electives she chooses will ensure she is able to graduate as long as she takes at least 16 credits in the Fall. Assume Zoya will pass any class she chooses to take. Also assume Zoya has taken Econ 360 and is a fully rational person who engages in utility maximizing behavior.

    To make it easier, let's say that Zoya is choosing between two types of classes. The first type is challenging classes, and the second type is easier classes. A challenging class is worth 4 credits, and an easier class is worth 2 credits. Assume there is no difference in cost for challenging versus easier classes.

    (a) (2 points) Choose a letter to represent the number of challenging classes Zoya takes and another letter to represent the number of easier classes Zoya takes.

    (b) (4 points) Write down an equation that represents all the combinations of challenging and easier classes such that Zoya will just barely earn 16 credits in the Fall. To check your equation, find 2 bundles of the number of challenging and easier classes that result in just barely 16 credits.

(c) (4 points) Suppose Zoya is always willing to give up taking 3 easier classes if she can get into a challenging class. Based on what we have learned in class, how many challenging and easier classes will Zoya take in order to just barely take 16 credits?

(d) (6 points) Suppose instead Zoya cares about balance in her schedule and so she prefers to take one easier class for each challenging class she takes, but if she has to choose between a challenging course and 2 easier courses she would choose the challenging course. Based on what we have learned in class, how many challenging and easier classes will Zoya take in order to just barely take 16 credits? Assume Zoya cannot take partial classes.