

Microeconomic Analysis Exam 2

ECON 306 – Safner

Spring 2019

Name: _____

I pledge that I have neither given nor received unauthorized aid on this exam

Please read all of the following information and wait until authorized to start the exam:

- You have **75 minutes** to complete this exam.
- This test consists of **10** required questions:

#	Type of Question	Points Each	Total Points
4	True/False/Uncertain & Explain	5	20
3	Short Answer	10	30
1	Problem	30	30
2	Long Answer	10	20
10			100

and 2 bonus questions, worth additional points.

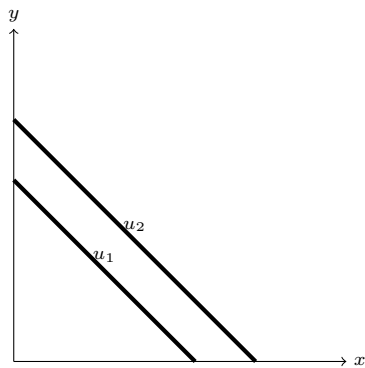
- Please read all instructions and question prompts carefully.
- Describing your thought process will give you a better chance to earn partial credit for wrong answers.
- You can ace this test without use of a calculator, but you can use a calculator. **Do not use your phone.**
- Good luck!

True/False/Uncertain and *Explain* (5 points each)

Choose any **four (4)** of the following questions. Indicate whether the following statements are **True**, **False**, or **Uncertain** (1 point), and give a short (2-3 sentences) **explanation** (4 points).

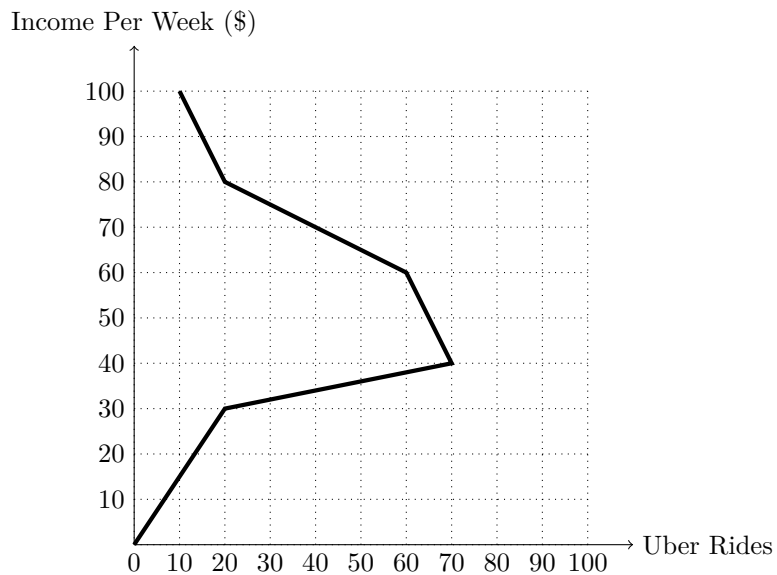
1. Emily just received a big promotion at her law firm, which comes with a 30% pay raise. Since receiving this promotion, she has bought 15% more gas than usual, and 40% more food. For Emily, gas is a *necessity good* and food is a *luxury good*.
2. Suppose that a person spends a large portion of their income on cell phone service. When the cost of cell phone service falls, this person decides to buy a lot more *other* goods. This can be explained by the *substitution effect*.

3. The graph below shows two indifference curves between two goods, x and y .

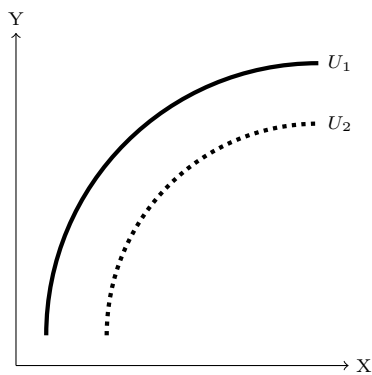


Based on the graph, the *cross price elasticity* between x and y is *positive*.

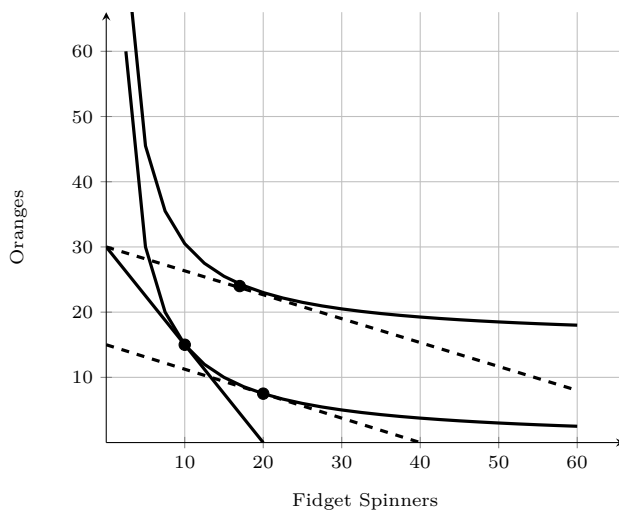
3. Based on the Engel curve for Uber rides below, Uber rides are always a normal good.



5. The graph below shows two indifference curves between two objects, X and Y . If the consumer enjoys a higher level of utility on U_2 than on U_1 , then X is a bad, Y is a good.



6. The graph below depicts a *fall* in the price of Fidget Spinners.



According to the graph, Fidget Spinners are a *normal* good.

Short Answer (10 points each)

Choose any **three (3)** questions to answer concisely (2-3 sentences). If applicable, show all work and clearly label all graphs.

7. Consider four objects: a , b , c , and d . If a person's utility function over them is

$$u(a, b, c, d) = a * b - c$$

then what kind of object is a , b , c , and d , respectively?

8. Describe the difference between the *real income effect* and the *substitution effect* for a good that changes in price.

9. If we are drawing an indifference curve that includes a *bad* on at least one axis, which *assumption(s)* of indifference curves do we violate, and why?

10. Ashkar has the following preferences over bundles of (apples, bananas):

$$(2, 6) \sim (4, 2) \succ (2, 0) \sim (1, 2)$$

Which of the following utility functions could describe his preferences? Explain why, briefly.

- i. $u(a, b) = 2a + b$
- ii. $u(a, b) = 4ab$
- iii. $u(a, b) = 6a + 3b$
- iv. $u(a, b) = a^2b^2$

Problem (30 points)

Show all work. You may *not* earn full credit if you only write the answer, even if correct.

11. Suppose you can buy Drinks (D) and Wings (W) at a local bar.
 - a. Suppose you have a budget of \$120/month to spend, the price of a Drink is \$3.00, and the price of a plate of Wings is \$4.00. Write a *graphable* equation for the budget constraint, and graph it on the first graph below. (3 points)
 - b. Suppose you earn utility according to the function:

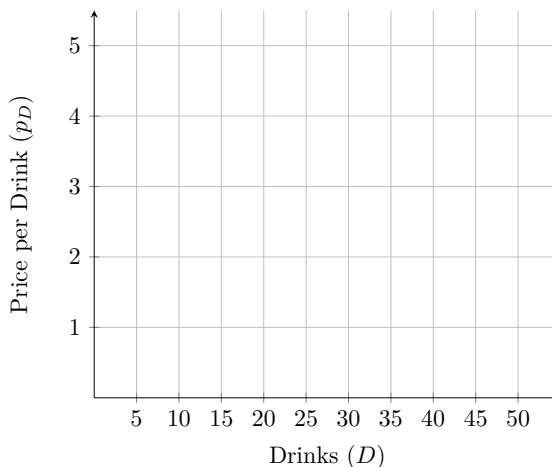
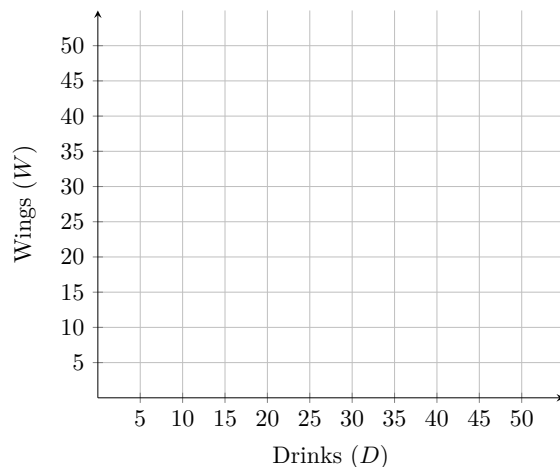
$$u(D, W) = DW$$

$$MU_D = W$$

$$MU_W = D$$

Write an equation for your *marginal rate of substitution* between D and W . (3 points)

- c. Calculate the *optimum* quantities of D and W that maximizes your utility subject to your constraints. Plot this point on the first graph below, (call it point **A**), and sketch an indifference curve through that point. (10 points)
- d. How much utility do you earn from the optimum bundle (point **A**)? (1 point)
- e. Now suppose the price of Drinks (D) *rises* to \$4.00. Find the equation of the *new budget constraint* (in *graphable* form), and add it to the first graph below. (3 points)
- f. Calculate the *new optimum* quantities of x and y under this new price. Plot this point on the first graph below, (call it point **B**), and sketch an indifference curve through that point. Hint: the formula for MRS has not changed. (6 points)
- g. How much utility do you earn from the new optimum bundle (point **B**)? (1 point)
- h. Plot the optima from parts c and f on the *second* graph below, describing the relationship between the price of Drinks and the optimal consumption of Drinks. Connect the points. What did you just draw? (3 points)



Long Answer (10 points each)

Choose any **two (2)** of the following questions to answer. Please answer clearly and concisely (2-5 sentences is sufficient). If applicable, show all work and clearly label all graphs.

12. As you are taking this exam, you are implicitly solving a constrained optimization problem. Briefly explain what your objective is, what your constraint is, and what choices and tradeoffs you must make to attain this objective. *Be specific*, in the context of taking an exam (meaning, we're not talking about utility and dollars, etc).
13. Explain the difference between the *income effect* and the *real income effect*. Use an example of an *inferior* good in describing each effect.
14. Our examples of real income and substitution effect in class were all when a good *decreases* in price. Describe the *real income effect* and *substitution effect* for housing when the price of housing *increases*.

Bonus

15. Labor economists commonly encounter “backward bending” supply curves for labor – that means that sometimes as wages rise, people decide to work *fewer* hours (rather than *more* hours, as the law of supply would predict). In economics, labor is often considered a *bad* because the opportunity cost of labor is leisure (which is a good).

Using our standard consumer theory of the effects of a price change (wage is the price of labor), describe the conditions where we would expect a wage increase to cause people to work *more* hours, and the conditions where we would expect people to work *fewer* hours.

Hint: make a graph with labor (hours worked) on the horizontal axis and wage income on the vertical axis. (5 points)

16. Explain an example of *concave* preferences, where extremes are preferred to averages. Draw some indifference curves (and indicate which ones provide more utility). Add a budget line (any budget line will do). Using the budget line, find the optimum (i.e. maximizing utility subject to budget) graphically. The normal way doesn't work! What must the optimal consumption be with concave preferences? (5 points)

Formulas

$$p_x X + p_y Y = m$$

$$\epsilon_{q,m} = \frac{\% \Delta q}{\% \Delta m}$$

$$\epsilon_{q_x, p_y} = \frac{\% \Delta q_x}{\% \Delta p_y}$$

- Two curves are *tangent* at a point \iff two curves have the same slope *at that point*