

Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. Failure to follow these directions will cost you 1 point. The test has 100 points (to be scaled up to 170 points) and is scheduled to take 50 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 12-point question should take 6 minutes. I cannot give extra time because some students have a class after your class.

1) (6 points each) Answer THREE of the following questions using the regression results on the next page. They are predicting the sales of cats using the price of cats and income as the explanatory variables.

A) Are the overall regression results good? Explain your logic.

B) Which variables are significant? Explain your logic.

C) If your customers have an income of \$20,000 and the price a cat is \$8/cat. Then write the equation which will predict the sales of cats. Briefly explain how you found it.

D) Given these results, are cats inferior, likely inferior, likely unrelated, likely necessity/luxury, or necessity/luxury. Explain your logic.

2) (10 points) Answer EITHER Part A OR Part B.

A) Suppose the own-price elasticity of demand for Pilot brand pens is -4. What is the marginal revenue for Pilot if they charge \$1.00/pen? Show all work and briefly explain what you did.

B) How has e-commerce affected the own-price elasticity of demand? Explain your logic.

3) (10 points each) Answer THREE of the following questions referring to Figure #1 on the next page. Point A is at (2.6, 4.6). Point B is at (6, 1). Point C is at (3.3, 1.4).

A) Which two points show the income effects and which two points show the substitution effects. State how you found those points.

B) Use the diagram to calculate the own-price elasticity of the good whose price changed. (Arc formula will be slightly easier than the point formula, but you can use either formula.) Show all work and briefly explain what you did.

C) Use the diagram to calculate the income elasticity of demand for bananas. (Point formula will be slightly easier than arc formula, but you can use either formula.) Show all work and briefly explain what you did.

D) Given the graph, are bananas and pears substitutes or complements? Explain your logic.

4) (12 points) Answer EITHER Part A OR Part B.

A) What is the income elasticity (E_I) of dogs using the point formula? Explain how you chose the rows you used. Show all work. What information about dogs does this tell you? Explain your logic.

B) What is the cross-price elasticity of dogs and cats (E_{xy}) using the arc formula? Explain how you chose the rows you used. Show all work. What information about dogs does this tell you? Explain your logic.

| P_{dog} | P_{cat} | Inc. | Q_{dog} |
|------------------|------------------|------|------------------|
| 20 | 25 | 400 | 10 |
| 30 | 25 | 400 | 10 |
| 30 | 25 | 600 | 12 |
| 30 | 15 | 600 | 8 |

5) (12 points) Answer EITHER Part A OR Part B.

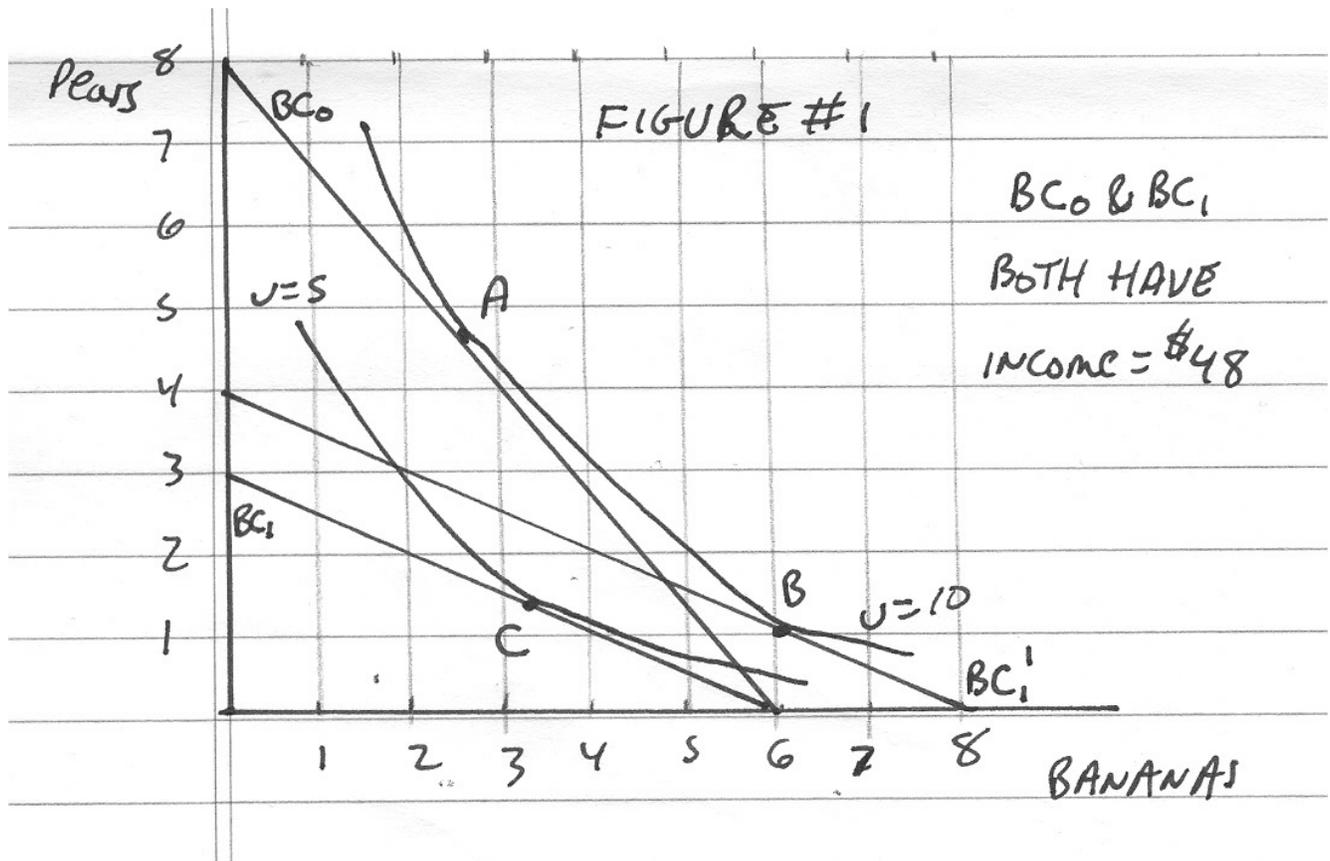
A) What is the equi-marginal principle for consumption. Explain why it makes sense.

B) What is the slope of the budget constraint with beer on the horizontal axis and chips on the vertical axis? Prove your answer is correct.

6) (16 points) Answer EITHER Part A OR Part B.

A) Draw the TP_L graph. Explain why it takes its shape.

B) Draw the AP_L/MP_L diagram. Note the area where the output elasticity of labor is elastic. Explain how you found that area.



Regression Statistics

| | |
|-------------------|----------|
| Multiple R | 0.513098 |
| R Square | 0.26327 |
| Adjusted R Square | 0.24808 |
| Standard Error | 104.1101 |
| Observations | 100 |

Analysis of Variance

| | df | Sum of Squares | Mean Square | F | Significance F | | |
|------------|----|----------------|-------------|----------|----------------|--|--|
| Regression | 2 | 375707.8 | 187853.9 | 17.33144 | 3.67e-07 | | |
| Residual | 97 | 1051374 | 10838.91 | | | | |
| Total | 99 | 1427082 | | | | | |

| | Coefficients | Standard Error | t Statistic | P-value | Lower 95.00 | Upper 95.00 |
|-----------|--------------|----------------|-------------|----------|-------------|-------------|
| Intercept | -124.500 | 113.616 | -1.096 | 0.276 | -350.048 | 100.944 |
| Price | -1.250 | 0.728 | -1.718 | 0.086 | -2.705 | 0.184 |
| Income | 0.013 | 0.002 | 5.874 | 5.72e-08 | 0.008 | 0.017 |