Write your name on the cover of the test booklet and nowhere else. Failure to follow these directions will cost you 1 point. The test has 240 points (to be scaled down to 200 points) and is scheduled to take 120 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 14-point question should take 7 minutes. I can give extra time, but not much.

Regression Statistics	
Multiple R	0.90348814
R Square	0.81629081
Adjusted R Square	0.79541477
Standard Error	40.0138727
Observations	50

Analysis of Variance

	df	***Sum of Squares***	***Mean Square***	***F***	***Significance F***
Regression	5	313031.3808	62606.2762	39.1018	4.083e-15
Residual	44	70448.8403	1601.1100		
Total	49	383480.2211			

	Coefficients	***Standard Error***	***t Statistic***	***P-value***	***Lower 95.00***	***Upper 95.00***
Intercept	-364.3845	316.6732	-1.1507	0.2555	-1002.5974	273.8285
P apples	-130.0081	81.5613	-1.5940	0.1174	-294.3841	34.3679
P oranges	154.7931	88.8019	1.7431	0.0876	-24.1754	333.7615
P melons	39.9214	83.6042	0.4775	0.6351	-128.5717	208.4145
Income	0.4191	0.1830	2.2897	0.0264	0.0502	0.7880
Advertising	159.9736	80.1105	1.9969	0.0514	-1.4784	321.4257

1) (8 points each) Answer THREE of the following questions using the regression statistics above. They were gotten by a regression to predict the **sales of apples**.

A) Write the equation which you would get from this regression to predict the quantity of apples bought. **Briefly** state how you got the equation.

B) Are the results of this regression good? **Briefly** explain your logic.

C) Are oranges and apples substitutes, likely substitutes, likely complements, complements or have an indeterminate relationship? **Briefly** explain your logic.

D) If you would buy 200 apples with the current income and a price of apples of $3/apple, then what is the own-price elasticity of demand for this good? Show all work. What type of good is that? **Briefly** explain your logic.

E) Which variables are significant? **Briefly** explain your logic.

2) (10 points) Answer ONE of the following.

A) Without drawing any diagram, explain the economic reason that revenue maximizing is not the same as profit maximizing.

B) What is meant by decreasing returns to scale? How can we tell if the firm is facing that?

C) What is the equ-marginal principle as it applies to consumption? Briefly explain why it is true.

3) (14 points) Answer EITHER Part A OR Part B.

A) Suppose that the firm's total cost curve is given by $TC = 4Q^3 - Q^2 + 5Q + 100$. Find the formulas for TFC,

TVC, ATC, AVC, AFC, and MC. Show all calculations.
B) What would you expect the income elasticity of demand for televisions to be? Why would you expect that number? What would you expect the own-price elasticity of demand for bananas is? Why would you expect that number?

4) (16 points) Answer EITHER Part A OR Part B.
A) Suppose that there is a monopoly. A firm is thinking of entering the industry. After the firm makes the decision on whether or nor to enter, the old firm must decide on whether they should have a high price or a low price. If there is entry and a low price, then the entrant will lose $10 and the old firm will lose $20. If there is entry and a high price, then the entrant will make $5 and the old firm will make $12. If there is no entry and a high price then the old firm will make $40. With no entry and a low price then the old firm will make $30. Set up the decision tree and find the equilibrium. Briefly explain how you found the equilibrium.
B) Create a 2x2 payoff matrix without a Nash Equilibrium. Prove there is no Nash Equilibrium.

5) (16 points) Answer EITHER Part A OR Part B.
A) Suppose that an industry currently has a Herfindahl-Hirschman Index of 1700. Two firms, with 10% and 5% of the market are thinking about merging? If the Department of Justice follows its own guidelines, will they be allowed to merge? Show all work and explain how you reached your decision.
B) Draw the supply and demand for a product we are importing. Draw the world price and label the volume of imports. Illustrate an appreciation of the US$ on the foreign exchange. Explain why the curve(s) moved as drawn. What happened to the imports? Why did that happen?

6) (16 points) Illustrate EITHER *Mothers' Day approaches* OR *the price of rose food increases* on the supply and demand for roses.

7) (18 points) Answer EITHER Part A OR Part B using "Figure #1" on Page #3. Three of the budget constraint lines are relevant to Part A and three of them are relevant to Part B. Three of the points where the curves are tangent are relevant to Part A and three of them are relevant to Part B. **For both parts, assume your income is $24.**
A) Using the relevant three budget constraints in figure #1, derive the demand curve for pasta. Plot the curve. Briefly explain how you found the points. Note: you can find the prices by knowing the income is $24.
B) Suppose BC_0 starts with an income of $24. The budget constraint moves BC_1. What caused that? Find the income and substitution effects. Explain how you found them. For the points you used to find the income and substitution effects, are milk and pasta substitutes or complements? Explain your logic.

8) (22 points) Copy the table to the right into your bluebook. Fill in the rest of the table showing the calculations you did for each of the entries.

Q	TR	MR	AR
0			
2	20		
4			9
6		9	
	70		

9) (24 points) Draw a SRMC/SRAVC/SRATC/AFC diagram. Illustrate EITHER an increase in the wage rate OR an increase in the salary of the CEO on the diagram. Explain why the curve(s) moved as drawn.

10) (28 points) Answer EITHER Part A OR Part B.
A) Draw the kinked demand curve. Explain why it takes that shape. Use it to explain why companies may be unwilling to change prices.
B) Suppose that a Cournot-duopoly has an industry demand of $P = 110 - \frac{1}{4}Q_I$. Both firms have a marginal cost of $20/unit. Draw the industry demand diagram and use it to derive the best-response function for the first firm. Plot only the one best-response function. Do **not** continue to find the outputs and price.

11) (28 points) Answer EITHER Part A OR Part B.

A) Draw an isoquant/isocost diagram with three isoquant lines and three isocost lines. Assume the wage rate is \$12/L and the rental rate is \$6/K. Use this diagram to derive the **LRTC curve**. Tell me the coordinates of the **LRTC curve** you derived. **Do NOT draw it**. Explain how you found the points on the **LRTC curve** and explain how you know the wage and rental rates in your diagram are what I asked for. If you need to make an assumption, tell me what assumption you are making.
B) Draw an isoquant which shows the output of 100 items. Put a scale on both axes. Draw two isocost lines. The first represents a wage of \$4/L and the rental rate is \$12/K. How much capital and labor will you use? Explain how you reached that conclusion. For the second isocost line, assume the wage rate is \$8/L and the rental rate is \$12/K. How much capital and labor will you use? Explain how you reached that conclusion. For both lines, you want to produce 100 items and remember to you have a precise scale on the axes.

12) (24 points) For this question only, I will grade what you write on this sheet. Use the table below to find the Nash Equilibrium or Equilibria if one or more exists. Find any dominant strategies if they exist. Find the safe (secure) strategies for both firms. Write the equilibria in your bluebook. Briefly explain in your bluebook how you reached each conclusion.

		Bethany College		
		High Quality	Medium Quality	Low Quality
West Liberty State College	High Quality	500 200	1030 430	180 600
	Medium Quality	550 300	400 390	250 450
	Low Quality	600 100	700 480	220 110

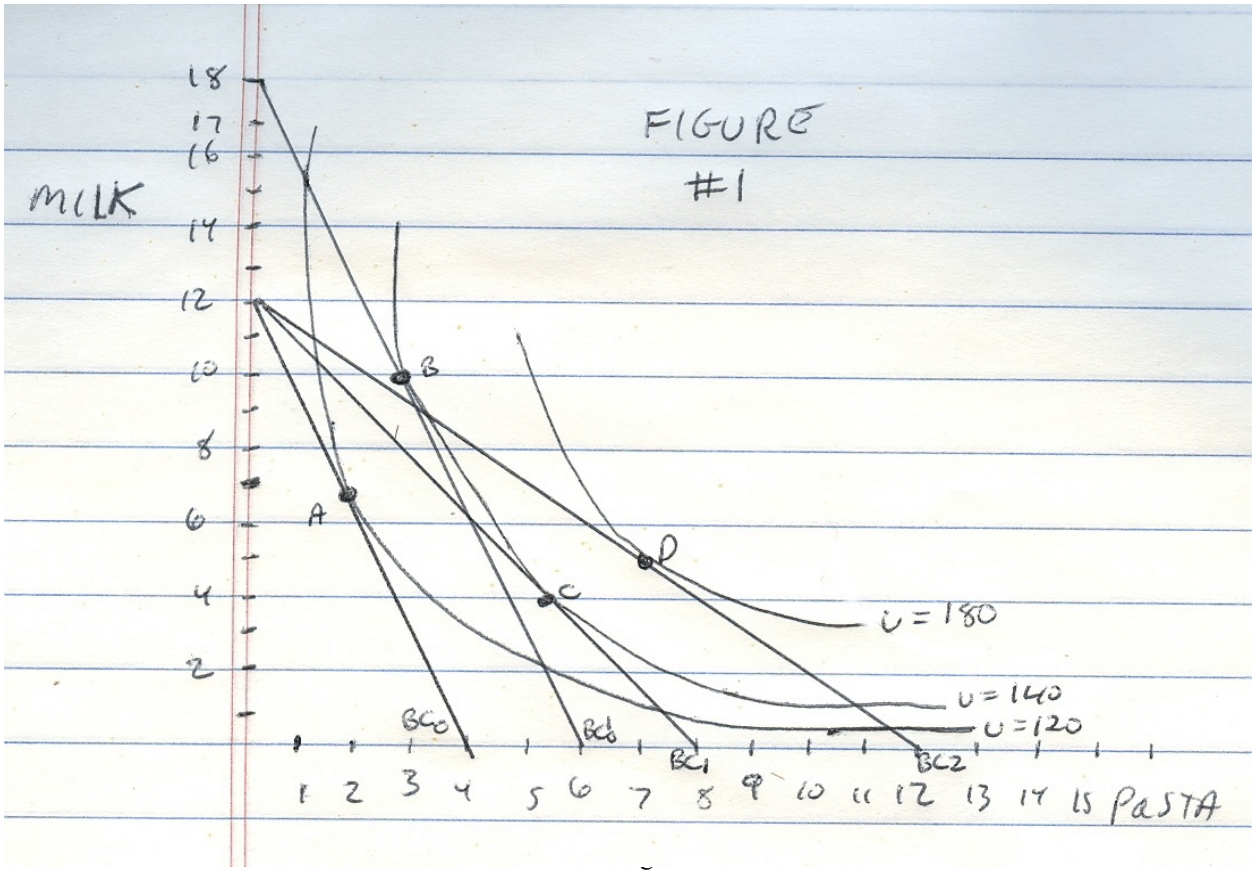
FIGURE
#1
MILK
18
17
16
14
12
10
8
6
4
2
A
B
C
D
U = 180
U = 140
U = 120
BC0
BC1
BC2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 PASTA