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 150 points and is scheduled to take 75 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 16-point question should take 8 minutes. I will give a few extra minutes, but probably no later than about 5 or 10 minutes after the hour.

$$PV = \sum_{t=1}^{n} \frac{FV_t}{(1+i)^t}, PV = \pi_0\left(\frac{1+i}{i-g}\right), PV = \pi_0\left(\frac{1+i}{i-g}\right)\left(1 - \frac{1}{(1+i)^{N+1}}\right)$$

1) (10 points each) Answer THREE of the following parts using the information on the back page to answer this question. The data is fictitious and shows the quantity of xylophones (X) sold as a function of its price, the price of yams (Y), and the amount of advertising that the firm producing xylophones does. **For all parts, tell me how you got your conclusions.**
A) How good a predictor is the complete equation?
B) Which variables are significant?
C) Given this data, are xylophones and yams substitutes, complements, likely to be substitutes, likely to be complements, or unrelated?
D) Given the regression, what is the own price elasticity of demand for observation #1?

2) (16 points) Do EITHER part A OR part B.
A) Why are there no demand curves that are perfectly inelastic over the whole range of the possible prices?
B) Is the own price elasticity of Ford Explorers likely to be elastic or inelastic? Explain two reasons why you made that choice.

3) (16 points) Do EITHER part A OR part B.
A) The implication from an indifference curve and budget constraint diagram is that to optimize utility we should set $MU_X/MU_Y = P_X/P_Y$, which can be rewritten as $MU_X/P_X = MU_Y/P_Y$. Explain the economic reason for either of those equations.
B) There are two ways to calculate MNB a.k.a. NMB. What are they?

4) (18 points) Do EITHER part A OR part B.
A) If you win a lottery, you may get $50,000.00 per year for 20 years. Because 20*50,000.00 is $1,000,000.00, the lottery people say that you win $1,000,000.00. What is wrong with their logic? Set up the equation that shows how it should be calculated.
B) Suppose that you could buy a stock that will make annual payments that start at $1000 and will grow at 3% per year forever. If you want a rate of return of 5%, then how much would you be willing to pay for the stock? Show all work and briefly explain your logic.

5) (20 points) Do EITHER part A OR part B.
A) Copy this table into your bluebook. Fill it in and show all calculations.

L	Q	MP_L	AP_L
0			
1	10		
2			15
	60	15	

B) For the production function given by $Q = F(K, L) = 2K^{1/2} + 9L^{1/3}$, calculate the MP_L and the AP_L when there 100 units of capital and 64 units of labor. Show all work and briefly state what you did.

6) (20 points) For EITHER the event in part A OR the event in part B, illustrate that event on the supply and demand for telephones for home use. Explain why the curve(s) moved as drawn. Show the change in the consumer surplus and briefly explain how you got it.
A) The government puts a tax on the sales of telephones.

B) Cellular phone systems expand so that cellular phones can be used almost anywhere at a low cost.

7) (30 points) Do EITHER part A OR part B.
A) Draw the indifference curves and budget constraints for milk and apple juice and assume that they are substitutes. Illustrate an increase in the price of milk. Show the income and substitution effects. Explain why the curve(s) moved as drawn, how the graph shows that they are substitutes, and how you know which is the income effect and which is the substitution effect.
B) Use the indifference curve and budget constraint diagram for bananas and cherries to derive the demand curve for bananas. Draw two points on the demand curve. Explain why the curve(s) moved as drawn and explain how you got the two points.

Observation	Qx	Px	Py	Ads
1	96	12	12	1
2	86	13	14	3
3	88	15	16	2
4	91	13	11	4
5	84	14	12	2
6	95	12	17	3
7	85	11	9	5
8	94	9	7	7
9	84	16	15	5
10	81	17	17	3
11	104	8	11	7
12	87	19	17	9
13	97	3	2	3
14	103	5	9	5
15	86	12	14	1
16	101	4	5	0
17	100	5	7	6
18	96	14	17	3
19	83	22	19	1
20	91	12	13	7

Regression Statistics	
Multiple R	0.851
R Square	0.724
Adjusted R Square	0.673
Standard Error	4.084
Observations	20

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Significance F
Regression	3	703.812	234.604	14.059	9.494E-05
Residual	16	266.987	16.686		
Total	19	970.8			

	Coefficients	Standard Error	t Statistic	P-value	Lower 95.00	Upper 95.00
Intercept	100.659	3.131	32.147	4.98E-18	94.021	107.297
Px	-1.950	0.411	-4.733	0.00014	-2.823	-1.076
Py	1.020	0.450	2.266	0.035	0.065	1.9741
Ads	0.392	0.383	1.023	0.319	-0.420	1.204