> Note:
> - Please answer in the space provided, or continue on the back of the page.
> - Show your calculations in order that you may receive partial credit even if you make a numerical error Scrap paper is available in the front of the room.
> - The examination will end at 11:50.
> - After you finish the exam, check over your work carefully.
> - You may turn in the exam and leave the room when you have finished.
> - Problem Set #3 is Due on October 7.

Part A: The demand function for Corn in Never-Never Land is

$$q = 200 - 50p,$$

where q is millions of bushels and p is price per bushel.
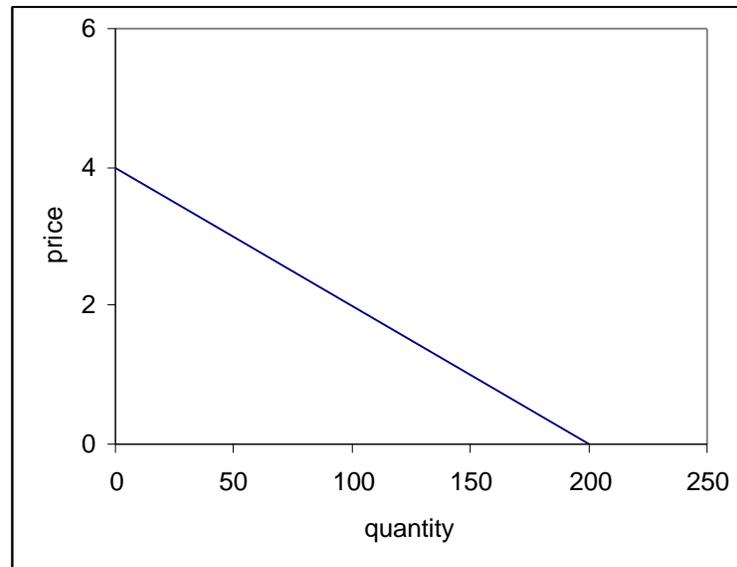
Suppose, for simplicity, that there is a drought every other year – even numbered years are good crop years but every odd year is bad. Farmers plant the same amount each year, but total farm output is only 50 million bushels in a bad crop year versus 150 million in a good year.

1.   Please fill in the blanks on the following table:

	Good Year	Bad Year	Average
Output (millions of bushels)	150	50	100
price	$1.00	$_____	$2.00
Farm Revenue ($millions)	150	$_____	$_____
Consumption (mill of b)	150	50	100
Consumer Surplus ($millions)	225	$_____	$_____

2. Suppose that the governor, concerned about the erratic fluctuations in the price of corn, purchases 50 million bushels of corn in years of good harvest, stockpiles the corn, and then sells off 50 million bushels of corn in bad years.

a. What will happen to the price of corn in good crop years as a result of this policy? What will happen to consumer surplus.

b.   Will consumers gain from this policy? Will farmers benefit? Explain.

3. When the price is $1.00, the elasticity of demand is _____.

Part II: Here are five tricky statements. Place a *T* in front of each *True* statement; place an *F* in front of each *False* statement. Now carefully explain on the back of this page what is wrong with <u>one</u> (only 1) false statement. Use a graph if it will help to clarify your explanation.

1. If the production transformation curve for England is Wine = 1000 – 2 Cloth, then the opportunity cost of a bolt of cloth is 2 barrels of wine and the opportunity cost of a barrel of wine is ½ a bolt of cloth.

2. If the production transformation curve for England is Wine = 1000 – 2 Cloth while in Portugal it is Wine = 2000 – 1 cloth, then Portugal has a Comparative Advantage in the production of both wine and cloth.

3. A government imposed price ceiling on apples would create a shortage of apples.

4. A minimum wage will increase the income of low wage workers if the demand for their services is elastic.

5. The equations for income and price elasticity of demand are

$$h_y = \frac{\partial q}{\partial y}\frac{y}{q} \quad \eta_p = -\frac{\partial q}{\partial p}\frac{p}{q}$$

~~~~~~

Honors Option: Please read over your answers to the rest of the exam before attempting this tricky problem; no partial credit!

Optimal Population Policy: The benevolent potentate of Econoland wishes to establish an optimal population policy for his country. There are 100 goodies to distribute, so if he decrees that the population will be 10, each citizen will get 10 goodies. If he decrees that the population will be 100, each citizen will get one goodie. All Econoland citizens have the utility function $U = \sqrt{X}$.

a) An adviser recommends that he should set his population policy so as to maximize the sum total of happiness.

Find the integer n (if there is one) that maximizes

$$H = U_1(X_1) + U_2(X_2) + \ldots + U_n(X_n),$$

where $X_i = 100/n$ and $U_i(X_i) = \sqrt{X_i}$

b) A second adviser specifies he should pick population size n so as to maximize minimum $U_i(X_i)$. What value of n will maximize the position of the least advantaged?