

- answers and only answers on the test paper. Show all work on separate paper. (10 point penalty) *Both the same price*
1. A theatre's group sales manager is offering a block of 50 tickets for a price of \$60 per person. However, the manager will discount sales of more than 50 tickets. For each additional ticket sold, the price per person will decrease by \$1.
 - a) Write a revenue equation *based on the number of additional persons*. Use the equation to answer part b).
 - b) What number of passengers, and what price, will produce maximum revenue?

2. Use an appropriate test from Chapter 12 to find all extrema, if any, for the function:

$$y = 2x \ln(.01x).$$

first or second derivative

Show explicitly all steps required, and identify the test you are using. Round answers to 2 decimals.

3. Consider the tables of information given below:

A. Daily dietary requirements (ounces)

	EEK α	EEK β	EEK γ
Rats	5	3	9
Mice	2	1	7

2x3

B. Cost per ounce (\$)

	Rodents R US	X-periment
EEK α	1	3
EEK β	2	1
EEK γ	1	1

3x2 *2x2*

The first table shows amount of food needed to feed an animal for one day, from three foods.

The second shows the cost of each food from each of two possible suppliers.

Create matrices from the tables. Multiply the matrices. Interpret each number in the resulting matrix.

4. Find the consumer's and producer's surplus for an item with the following:

Demand: $p = 200 - q^2$ Supply: $p = 10q$.