QUIZ 4 - MATH 111 Monday, February 14

YOUR NAME:_____ George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. In a small town in Bavaria, there are two food retailers that offer various deals to attract customers that buy pork chops. Friedrich's Club charges a monthly subscription fee of €40 and sells the chops at €5.50 per Kilogram. On the other hand, Wilhelm's Club charges a monthly subscription fee of €30 and sells the chops at €7.00 per Kilogram.

   (a) Use a formula to express the total cost per month for a member of Friedrich's to purchase N Kilograms of pork chops.

   (b) Use a formula to express the total cost per month for a member of Wilhelm's to purchase N Kilograms of pork chops.

   (c) Franz is a member at Friedrich's and Wolfgang is a member at Wilhelm's. In the month of January they paid an equal total amount for their pork chops. How many Kilograms of pork chops did each of them purchase?

   (d) A friend of yours will be visiting the Bavarian town where both clubs are located for a summer vacation during the entire month of June. She is very fond of pork chops. She knows that you have taken George's Math 111® at LSSU and she has asked you for advice on which of the two food clubs to join for buying her pork chops. What would your advice be?

2. A manufacturer of tourist key chains in China has fixed costs of \$550 per month and the variable cost is \$75 per thousand key chains. Let N be the number, in thousands, of key chains produced in a month.

   (a) Find a formula for the manufacturer's total cost C as a function of N.

   (b) The highest price p in dollars per thousand chains at which N can be sold is given by $p = 85 - 0.03N$. Using this, find a formula for the total revenue as a function of N.

   (c) Find a formula for the profit P of this manufacturer as a function of N.

   (d) What are the break-even points for this manufacturer, assuming that it can produce at most 500 thousand chains per month?

   (e) How many thousand key chains must it produce to maximize its profit?