Questions and Problems, Ch. 3 (100%: 25 points; maximum, 30 points)
The point total for each question is given in parenthesis before the question or problem
number. Answers need not be typed, but they must be legible and presented as complete
sentences. Points will be deducted for incorrect grammar, and mistakes of an analytical,
mathematical, or graphical nature. Generally a 10 point question that asks for a verbal
response should be about three quarters of a page in length. Feel free to work on the
questions and problems together, but no coping is allowed. Also, feel free to ask about the
homework in class, or in my office. Q&P designated as a "Spreadsheet Problem" are
intended to familiarize yourself with the basics of using a spreadsheet. Include the
spreadsheet with your answers.

(10)3-1. Joy's Frozen Yogurt shops have enjoyed rapid growth in northeastern states in recent years. From analysis of Joy's various outlets, it was found that the demand curve follows this pattern: $Q = 200 - 300P + 120I + 65T - 250A_C + 400A_J$, where Q = number of cups served per week; P = average price for each cup; I = per capita income in the given market (in thousands); T = average outdoor temperature; A_C = Competitor's monthly advertising expenditure (in thousands of $s); and A_J = Joy's monthly advertising expenditure (in thousands of $s). One of the outlets has the following conditions: $P = 1.50$; $I = 10$, $T = 60$; $A_C = 15$, and $A_J = 10$.
a. Estimate the number of cups served per week by this outlet. Also determine the outlet's demand curve.
b. What would be the effect of a $5,000 increase in the competitor's advertising?
c. What would Joy's advertising expenditure have to be to counteract this effect?

(10)3-2. Suppose a firm has the following demand equation: $Q = 1,000 - 3,000P + 10A$ where Q = quantity demanded per period; P = price in $s; and A = advertising expenditures in $s. Assume the $P = \$3$ and $A = \$2,000$.
a. Suppose the firm dropped the price to $2.50. Would this be beneficial? Explain.
b. Suppose the firm raised the price to $4.00 while increasing the advertising by $100. Would this be beneficial? Explain.

(103-3. A travel Company has hired a management consulting company to analyze demand in 26 regional markets for one of its major products: a guided tour to a particular country. The consultant uses data to estimate the following equation: $Q = 1,500 - 4P + 5A + 10I + 3PX$ where Q is the amount demanded per period; P is the price of the product in dollars; A is advertising expenditures in **thousands** of dollars; I is per capita income in **thousands** of dollars; and PX is the price of some other travel products offered by a competing travel company.
a. Calculate the amount demanded for the product using the following data: $P = \$400$; $A = \$20,000$; $I = \$15,000$; and $PX = \$500$.
b. Suppose the competitor reduced the price of its travel product to $400 to match the price of this firm's product. How much would this firm have to increase its advertising in order to counteract the drop in its competitor's price?.