BUS 310, Quiz #3, Fall 2017 Name KEY

Instructions: This quiz is to be completed entirely in class. You may not use cell phones, and you may only access internet resources you are specifically directed to use. Go to Blackboard and open the data file posted under Quiz #3. Use it to answer the following questions. Place your answers to the bolded questions directly on this page. (If you do not answer questions on this page, they will not be graded.)

1. Maggie Stewart loves desserts, but due to weight and cholesterol concerns, she has decided that she must plan her desserts carefully. There are two possible desserts she is considering: snack bars and ice cream. After reading the nutrition labels on the snack bar and ice cream packages, she learns that each serving of a snack bar weighs 37 grams and contains 120 calories and 5 grams of fat. Each serving of ice cream weighs 65 grams and contains 160 calories and 10 grams of fat. Maggie will allow herself no more than 450 calories and 25 grams of dessert per day. Also, she assigns a "taste" index to each gram of each dessert, where 0 is the lowest and 100 the highest. She assigns a taste index of 95 to ice cream, and 85 to snack bars. Use solver to find the daily dessert plan that stays within her constraints, and maximizes the total taste index of her dessert. **How many servings of snack bars and ice cream may she eat?**

fat per day

She can eat up to 3.75 snack bars but no ice cream.

2. In the Quiz #3 data file, Sheet #2 shows a set of data relating advertising dollars and units sold for a particular product, the log of both original x and y variables are also shown. Created from the data, and the manipulated data are two scatterplots. The one on the left displays the original data with three different algebraic models for the data. The one on the right is built from the log data, algebraically equivalent to the best model from the graph on the left. The sheets #2-1 and #2-2 show the full regression analysis for the straight-line linear model for the original data and the log-log model respectively. **Describe your analysis below. Discuss the model R^2 values, the residual graphs included, P-values, etc. Be as thorough as possible.**

The R^2 value of the power model $y = 1{,}000{,}000 \times^{0.2022}$ (1E6)

is 0.9984 equivalent to $y = 0.2022 \ln x + 13.82$

this is a very strong fit to the data. The residual analysis of the linear model confirms the data is nonlinear, whereas the power model confirms the errors are more random and has extremely low p-values for all coefficients.

Submit your completed Excel file to Blackboard, and submit your paper quiz to your instructor in class.