

Name _____

Student Number _____

University of Toronto Mississauga

STA442/1008 2012

QUIZ 7 (9am)

$$F = \left(\frac{n-p}{s} \right) \left(\frac{a}{1-a} \right) \qquad a = \frac{sF}{n-p+sF}$$

1. (1 Point) Ignoring which new software package the sales representative employed, is there evidence that sales are better on average this quarter than last quarter? *On your list file, circle the test statistic and the p-value, and write "Yes" or "No."* Write the question number (1) beside it. (No, $t = 1.43$, $p = 0.1607$)
2. (1 Point) Write $E[Y|\mathbf{X}]$ for a regression model in which the slope of the regression line relating sales this quarter to sales last quarter might depend on which software was used. You do not have to say how your dummy variables are defined. You will do that in the next question.
(For the answer to this question and the next, see Slide 36 of the Regression 2 slide show.)
3. (3 Points) Make a table showing how you defined the dummy variables for software package. Make number 3 the reference category. Add a column showing $E[Y|\mathbf{X}]$ for each software. Because they are ones and zeros, symbols for the dummy variables should not appear in the $E[Y|\mathbf{X}]$ column.

4. (1 Point) In terms of the regression coefficients from Question 2, what is the slope of the regression line for Software Package 3? Your answer is in terms of Greek letters. (β_1)
5. (4 Points) Now we want to know whether the three regression lines are parallel.
- (a) In terms of the symbols of your regression model, what is the null hypothesis? Your answer is in terms of Greek letters. ($\beta_4 = \beta_5 = 0$)
 - (b) Circle the test statistic on your list file. Write the question number (5b) beside it. ($F = 10.30$)
 - (c) Circle the p -value on your list file. Write the question number (5c) beside it. ($p = 0.0004$)
 - (d) Are the results statistically significant? Answer Yes, No or Impossible to Determine. (Yes)
 - (e) Is there evidence that the regression lines are non-parallel? Answer Yes, No or Impossible to Determine. (Yes)

Please turn in your log file and your list file. Make sure your name and student number are written on both of them.