Module 12: Statistical inference for multiple regression

(The attached PDF file has better formatting.)

Homework assignment: F test and analysis of variance

This homework assignment continues the scenario in Module 9.

We regress the Y values on the X_1 and X_2 values in the table below.

X_1	X_2	Y	X_1	X_2	Y	X_1	X_2	Y	X_1	X_2	Y
1	1	-0.395	1	2	-1.705	1	3	-2.942	1	4	-3.634
2	1	1.942	2	2	0.964	2	3	-2.463	2	4	-1.349
3	1	1.717	3	2	0.206	3	3	0.397	3	4	-0.982
4	1	2.258	4	2	2.908	4	3	-0.092	4	4	-0.235

A. What is the null hypothesis for the omnibus F test?
B. What are the total sum of squares (TSS), regression sum of squares (ResSS), and residual sum of squares (RSS)?
C. What are the degrees of freedom for the residual sum of squares and regression sum of squares?
D. What is the value of the F statistic?
E. What is the p value for this F statistic?

● Show the formulas and the computations for Parts A through D.
● Use Excel or other statistical software to find the p value in Part E.