Determining Significance of Relationships with the F Test  
Vartanian: Data 540

1. Given that the r coefficient is .80 and your sample size is 42, is there a significant relationship (at the 5% level for a two tailed test) between x and y? What is the highest level of significance for this relationship?

2. Given that the r coefficient is .80 and your sample size is 12, is there a significant relationship (at the 5% level for a two tailed test) between x and y?

3. Given an r coefficient of .40 and an n=32, is there a significant relationship between x and y? Give the highest level of significance.
Answers:

1. 

\[ F_{1,40} = \frac{.64 \times 40}{.36} = 71.11 \]

The critical value at the p=.05 level is 4.08. Since the F value we have determined is larger than the critical value, we would reject our null hypothesis. We would therefore give credence to our alternative hypothesis.

2. 

\[ F_{1,10} = \frac{.64 \times 10}{.36} = 17.78 \]

Our critical value is 4.96. Since the F value is greater than the critical value, we reject \( H_0 \) at the 5% level. The critical value for the 1% level of significance is 10.04. We can therefore reject \( H_0 \) at the 1% level as well. For the 0.1% level of significance, the critical value is 21.04 and we cannot reject \( H_0 \) since the critical value is larger than the F value.

3. 

\[ F_{1,30} = \frac{.16 \times 30}{.84} = 5.7 \]

Since 5.7 is 4.17, the critical value for the p=.05 level of significance, we would reject \( H_0 \) at the 5% level. Since the critical value for the 1% level of significance is 7.56, we would not reject \( H_0 \) since the F value is less than the critical value.