1. For each of the following situations, state how large the F statistic needs to be for rejection of the null hypothesis at the 5% level. Sketch each distribution and indicate the region where you would reject.

a). The main effect for the first factor in a 3 x 5 ANOVA with 3 observations per cell.

b). The interaction in a 3 x 3 ANOVA with 3 observations per cell.

c). The interaction in a 2 x 2 ANOVA with 51 observations per cell.

(I thought this table might help) Here is the general form of the two-way ANOVA table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Source | Degrees of Freedom | Sum of Squares | Mean Square | F |
| A  B  AB  Error | I – 1  J – 1  (I – 1)(J – 1)  N – IJ | SSA  SSB  SSAB  SSE | SSA/DFA  SSB/DFB  SSAB/DFAB  SSE/DFE | MSA/MSE  MSB/MSE  MSAB/MSE |
| Total | N – 1 | SST |  |  |