

Due Tuesday, Apr 9

Solve the following problems and staple your solutions to this cover sheet.

1. Exercise 10.50
2. Exercise 10.64
3. Exercise 10.65
4. Exercise 10.66
5. Exercise 10.67 Note: $F_{\nu_2, \frac{\alpha}{2}}^{\nu_1} = F_{\nu_1, \nu_2}(\frac{\alpha}{2})$.
6. Exercise 10.70
7. Exercise 10.71 Note: $\sigma > 0.7$ if and only if $\sigma^2 > 0.7^2$.
8. Exercise 11.3
9. Let Y equal the number of pounds of butterfat produced by a Holstein cow during the 305-day milking period following the birth of a calf. We shall test the null hypothesis $H_0 : \sigma^2 = 140^2$ against the alternative hypothesis $H_a : \sigma^2 > 140^2$.
 - (a) Give the test statistic and a rejection region that has a significance level of $\alpha = 0.05$, assuming that there are $n = 25$ observations.
 - (b) Calculate the value of test statistic and give your conclusion using the following 25 observations of Y .

425	710	661	664	732	714	934	761	744	653	725	657	421
573	535	602	537	405	874	791	721	849	567	468	975	
10. Let Y_1 equal the weight in grams of a Low Fat Strawberry Kudo and Y_2 the weight in grams of a Low Fat Blueberry Kudo. Assume that the distributions of Y_1 and Y_2 are normal and independent with variances σ_1^2 and σ_2^2 , respectively. Use the following 9 observations of Y_1 :

21.7	21.0	21.2	20.7	20.4	21.9	20.2	21.6	20.6
------	------	------	------	------	------	------	------	------

 and 13 observations of Y_2 :

21.5	20.5	20.3	21.6	21.7	21.3	23	21.3	18.9	20.0	20.4	20.8	20.3
------	------	------	------	------	------	----	------	------	------	------	------	------

 to test $H_0 : \frac{\sigma_1^2}{\sigma_2^2} = 1$ versus $H_a : \frac{\sigma_1^2}{\sigma_2^2} \neq 1$. Use $\alpha = 0.05$.