**Rewrite Exam 1, question 11:** One has fit a regression model with 6 variables (5 independent variables plus the intercept), to 18 observations.

One is testing the hypothesis $H_0: \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$,

versus the alternative hypothesis that $H_0$ is false.

**TSS is the total sum of squares.**
**RSS is the residual (error) sum of squares.**

What is the critical region for a test at a 1% significance level?

A. $TSS \geq 3.1 \text{ RSS}$

B. $TSS \geq 3.2 \text{ RSS}$

C. $TSS \geq 3.3 \text{ RSS}$

D. $TSS \geq 3.4 \text{ RSS}$

E. $TSS \geq 3.5 \text{ RSS}$

**Exam 2, question 18:** The $r^{th}$ value from smallest to largest is:

**Exam 2, solution 42:** $14S_1^2/\sigma_1^2$ is Chi-Square with 14 degrees of freedom.

**Exam 3, solution 1:** those with $x$ values closest to $x_0$ get more weight

**Exam 4, solution 11:** The smoothed density at 70 is:

**Exam 4, solution 35:** The main limitation of GAMs is that the model is restricted to be additive. However, we can add interaction terms by including additional predictors such as $X_jX_k$.

In addition we could add low-dimensional interaction functions of the form $f_{jk}(X_j, X_k)$ into the model.

Thus while “GAMs allow one to include interaction terms.” is not a listed advantage of GAMs, the question would be much better without the given choice D.

I will change the question to:

D. The smoothness of each function on a predictor can be summarized via degrees of freedom.

E. All of the above are advantages of GAMs.

**Exam 6, Q. 24:** You are given a sample of size four: 11, 12, 12, 16.

**Exam #6, sol. 28-30:** In the table the total degrees of freedom should be $(3)(4)(2) = 24$

**Exam 7, sol. 35,** in the Comment: if each component follows an **Exponential distribution**

**Exam #9, sol. 7:** $\theta = 1/\lambda = 1/(1/2) = 2$.

**Exam #9, sol. 26:** $1 + 5 + 4 + 3 + 2 + 1 = 16$ models. Statement III is false.
Exam #12, sol. 21: Applying this with $k = -3$ and $\tau = 3$: $E[1/X^3] = \theta^{-3} \Gamma[1 - (-3)/3]$