STAT 706 Homework 6 SPRING 2019

Due on Thursday March 28 at the beginning of lecture. Note: R stands for exercises in Rosenthal's book.

- 1. R 6.3.2
- 2. R 6.3.4
- 3. R 6.3.6
- 4. R 7.2.5
- 5. R 7.4.10
- 6. **BONUS:** Let X_1, X_2, \ldots be an *i.i.d.* sequence of random variables. Assume that each $X_i > 0$ almost surely, and that both $E[X_i]$ and $E[1/X_i]$ are finite. Set $S_n = X_1 + \cdots + X_n$. Show that

$$E\left[\frac{S_m}{S_n}\right] = \begin{cases} \frac{m}{n} & \text{if } m \le n\\ 1 + (m-n)E[X_1]E\left[\frac{1}{S_n}\right] & \text{if } m > n. \end{cases}$$