James-stein estimation
Exercises

1 CASI

Chapter 7 Exercises

1. Suppose $\mu \sim \mathcal{N}(M, A)$ and $x \mid \mu \sim \mathcal{N}(\mu, D)$, $D > 0$ known.
   (a) What is the marginal distribution of x?
   (b) What is the posterior distribution of μ given x?
2. In Table 7.1, suppose the MLE batting averages were based on 180 at-bats for each player, rather than 90. What would the JS column look like?
3. In Table 7.1, calculate the JS column based on (7.20).
4. Perform a simulation with $B = 1000$ binomial (n, P) replicates to check the accuracy of (7.21)–(7.22), using $n = 90$ and $P = 0.265$.
5. Your brother-in-law's favorite player, number 4 in Table 7.1, is batting .311 after 90 at-bats, but JS predicts only .272. He says that this is due to the lousy 17 other players, who didn't have anything to do with number 4's results and are averaging only .250. How would you answer him?