

Homework 5

Math 315, Fall 2019

Due 4 October by 4:00 p.m.

Instructions: Complete the following problems and submit them by 4 p.m. on the due date. Please make sure that your solution is neatly written, clearly organized, and stapled (if there are multiple pages). You may complete derivations by hand, but any R work should be completed using R Markdown to render the final write up. You may hide the plotting code chunks, but please do not hide the code chunks where you derive your posteriors or simulate from distributions, since we may need to “dig into” these to point out minor errors.

BSM Chapter 2 exercises 10, 11, and 16

In addition, complete the following problem:

For each of the following densities, derive a natural conjugate prior distribution for the unknown parameter.

- Let $Y_1, \dots, Y_n \sim \text{Gamma}(\alpha, \beta)$, where α is fixed and known.
- Let $Y_1, \dots, Y_n \sim \text{Normal}(\mu, \sigma^2)$, where μ is fixed and known.