Homework #2

STA 630, Spring 2025

Due: February 21, Friday

Problem 1 (20 pts)

Problem 3.10 from Hoff.

- (a) 10 pts
- (b) 10 pts

Problem 2 (25 pts)

Problem 3.12 from Hoff.

- (a) 9 pts
- (b) 8 pts
- (c) 8 pts

Problem 3 (25 pts)

Problem 5.1 from Hoff.

- (a) 7 pts
- (b) 6 pts
- (c) 6 pts
- (d) 6 pts

Problem 4 (30 pts)

Suppose $x_1, \ldots, x_n$ is a random sample from an exponential distribution with mean $1/\theta$.

1. Derive Jeffrey's prior for θ (10 pts).

2. Derive the posterior distribution of θ using Jeffrey's prior (10 pts).

3. Derive the predictive distribution of a future observation z (10 pts).

Problem 5 (Bonus: 20 pts)

Problem 5.3 from Hoff.