Suggested problems 5

STA 213

These are the solutions only for the odd numbered problems. For the even numbered problems look on DeGroot.

page 320

5. Beta distribution with parameters $\alpha = 4$ and $\beta = 6$.

9. Uniform distribution on the interval (11.5,12.5).

page 327

3. Uniform distribution on the interval (0,1).

page 336

1. $\frac{6}{35}$

11. (a) $\xi_A(\theta|x)$ is a beta distribution with parameters $\alpha = 712$ and $\beta = 291$; $\xi_B(\theta|x)$ is a beta distribution with parameters $\alpha = 714$ and $\beta = 291$.
    (b) $\delta_A^* = \frac{712}{1003}$, $\delta_B^* = \frac{714}{1005}$.

page 346

1. $\frac{29}{35}$

5. $\hat{\sigma}^2 = \frac{1}{n}\sum_{i=1}^{n}(X_i - \mu)^2$

9. If n is odd, $\hat{\theta}$ is the middle observation; if n is even $\hat{\theta}$ can be either of the two middle observations or any value between these two observations.

11. $\hat{\theta}_i = n_i/n$ $(i = 1, \ldots, k)$.

page 354

1. $\hat{\sigma} = \overline{X}_n^{1/2}$

5. $\hat{\theta} = \overline{X}_n + 1.645[\frac{1}{n}\sum_{i=1}^{n}(X_i - \overline{X}_n)^2]^{1/2}$

page 376

11. $\overline{X}_n$

page 410

11. $\mu_0 = 3$, $\lambda_0 = \frac{1}{4}$, $\alpha_0 = 3$, $\beta_0 = 3$.

page 417

5. The M.S.E.'s of S_0^2 and S_1^2 are given by Eq. (8) with $c = \frac{1}{n}$ and $c = \frac{1}{n-1}$ respectively.

11. (b) $n_i = \frac{np_i\sigma_i}{\sum_{j=1}^{k} p_j\sigma_j}$, ignoring the fact that $n_1, \ldots, n_k$ must be integers.

page 430

3. $I(\sigma) = 2/\sigma^2$

page 440

1. (a)

$$\pi(\theta) = \begin{cases} 1 & \text{for } \theta \le 1.5 \\ (1.5/\theta)^n & \text{for } \theta > 1.5 \end{cases}$$

(b) $(3/4)^n$

3. c= 0.392.

page 452

1. (b) $\frac{7}{8}$

5.

$$c = \frac{\log \frac{1-p_1}{1-p_0}}{\log \frac{p_0}{p_1} + \log \frac{1-p_1}{1-p_0}}$$