Due Tuesday, Nov 27

Solve the following problems and staple your solutions to this cover sheet.

1. Exercise 7.27

2. Exercise 7.34

3. Exercise 7.39

4. Exercise 8.4 (Not $\hat{\theta}_4$. See the handout on results from Chapters 5 and 6.)

5. Exercise 8.5

6. Exercise 8.9

7. Exercise 8.20

8. Exercise 8.24

9. Suppose $Y_1$, $Y_2$, · · · , $Y_n$ denote a random sample of size $n$ from an exponentially distributed population with mean $\theta$. Show that the sample mean $\hat{\theta} = \bar{Y}$ is an unbiased estimator of $\theta$ and find its variance.

10. We want to estimate the fraction $p$ of people in a population favoring certain presidential candidate. Let $Y$ be the number of people favoring that candidate in a random sample of size $n$. Then $Y$ has a binomial distribution. Show that $\hat{\theta} = \frac{Y}{n}$ is an unbiased estimator of $p$ and find its standard deviation (error).