Homework 2 (Due Wednesday, Jan. 20, 2016)

Section 7.5: #8, #10

Section 7.6: #3, #8, #23 (see Section 5.8 of the textbook for definition and properties of Beta distributions).

Supplementary Exercises: #10

Additional Problems:

1. Let $X_1, \ldots, X_n$ be a random sample (i.i.d.) from an exponential distribution, Exp(λ), with rate λ.
(a) Find a method of moment estimator of λ using only the first moment.
[Hint: $E(X_i) = \frac{1}{\lambda}$.]
(b) Find a method of moment estimator using only the second moment.
(c) Find another method of moment estimator using both the first and second moments.
(d) Find a method of moment estimator for $P(X_1 \geq 1)$.

2. (a) Supplementary Exercise #4.
(b) For the same random sample from (a) find a method of moment estimator using the first moment.
(c) As in (b) but find a method of moment estimator based on a higher or higher moments.
(d) Discuss whether any of the moment estimators, including those in (b) and (c) but not restricted to them, could be the same as the MLE under this model. Explain briefly.