MATH 262

Section 4.9 Day 37

1. Let X_1 and X_2 be iid Exp $\left(\frac{1}{10}\right)$.

   (a) What is the pdf of $Y_1 = \min(X_1, X_2)$?

   (b) What is the expected value of Y_1?

   (c) What is the pdf of $Y_2 = \max(X_1, X_2)$? What is $E(Y_2)$?

2. Let X_1, X_2, X_3 be iid Exp $\left(\frac{1}{10}\right)$. What is the expected value of the sample median?

3. Let X_1, X_2, X_3 be iid Unif$[0, 1]$. What is the probability that the sample median is between $\frac{1}{4}$ and $\frac{3}{4}$?

4. Let n be a positive odd integer and let $X_1, X_2, \ldots, X_n$ be iid Unif$[0, 1]$. What is the smallest n such that the sample median is between 0.4 and 0.6 with probability greater than $\frac{1}{2}$?

5. Let $X_1, \ldots, X_8$ be iid Unif$[0, 1]$.

   (a) Make a plot of the pdfs of all eight order statistics.

   (b) What are the expected values of all eight order statistics?