Stat 122 (Mathematical Statistics 2)

Problem Set No. 4

INSTRUCTIONS: Answer the following as indicated. Show detailed solutions.

1. Let $Y_1, Y_2, \cdots, Y_n$ be independent, uniformly distributed random variables on the interval $[0, \theta]$. Find the

a. probability density function of $Y_{(n)} = max(Y_1, Y_2, \cdots, Y_n)$.
b. mean and variance of $Y_{(n)}$.

2. Suppose that the number of minutes that you need to wait for a bus is uniformly distributed on the interval [0, 15]. If you take the bus five times, what is the probability that your longest wait is less than 10 minutes?