

Homework Problems
Due Wednesday, September 17, 2008

Problem 1 *Let X be a random variable with $E(X) = 2$ and variance $\text{Var}(X) = 3$. What is $E(X^2)$?*

Problem 2 *3.11 on page 21 of Durrett's book.*

Problem 3 *The first two inequalities of problem 3.12 on page 21 of Durrett's book.*

Problem 4 *A certain dread terminal disease affects 0.1% of the population. There is a test which is 99% accurate in asserting that a person has the disease if in fact the person has the disease and is 99% accurate in asserting that a person does not have the disease if in fact the person does not have the disease. What is the probability that a person has the disease if the person tests positive for the disease?*

Problem 5 *A pair of dice is tossed 10 times in succession. What is the probability of observing no 7's and no 11's in any of the 10 tosses?*

Problem 6 *A boy comes from a family of three children. What is the probability that the other two children are also boys?*

Problem 7 *A boy is the eldest child from a family of three children. What is the probability that the other two children are also boys?*