COURSE NO.: **22S:175**
COURSE TITLE: **Risk Theory**
INSTRUCTOR: **Shyamal**

H.W. NO.: **II**
H.W. DATE: **9/1/04**
DUE DATE: **9/8/04**

Instructions

i. Parts carrying extra credits and starred problems are not required part of the assignment. Nevertheless, a serious attempt followed by a discussion of these during office hours is encouraged.
ii. Constructive comments on the assignments and for that matter any other aspect of the course will be welcomed.

Problem 1

1. Let X_1 and X_2 be the outcome from a roll of a pair of dice. Find the probability mass function of $X_1 + X_2$.
2. Let $X_i,\ i = 1, 2, \ldots n$ be n i.i.d. Poisson variates with parameter λ. Find the distribution of the sum of them.
3. Let $X_i,\ i = 1, 2, \ldots n$ be n i.i.d. Normal variates with parameters μ and σ^2. Find the distribution of the sum of them.
4. **Extra credit:** Let $X_i,\ i = 1, 2, \ldots n$ be n i.i.d. Cauchy variates with parameters 0 and 1. Find the distribution of the sum of them and observe that the distribution of their average is the same as that of any single one of them. Using this fact or otherwise show that the variance is ill defined for the Cauchy distribution.

The rest of the assignment is from BOWERS ET. AL. - They consist of problems 2.8,2.14, 2.15 and 2.16.