Homework 3

Ma 623 Stochastic Processes

due Tuesday Feb 14 2006

From Ross "Stochastic Processes" 2nd ed. do the following:
page *91* exercises *2.13, 2.30, 2.33.*

In addition do the following problem:

(*I*) Using a software package simulate a Poisson process on the plane suitable for problem 2.33 above. Use $\lambda = 2$. With the help of this simulation answer the following questions:

(1) Estimate the probability that the circle of radius 1 centered in the origin of the plane contains two events.

(2) Estimate the probability in part a) of the above problem. Use the origin of the plane as the fixed point, and varying values for the distance t (say $t \in \{0.25, 0.5, 1, 2, 3, 4\}$). Use as many repetitions as you like.

(3) Do the same thing as in part (2) but for the distance $R_2 - R_1$, again with the R_i's defined in the problem 2.33.