ECEn 370

Quiz 9

Friday, March 12, 2010.

1. At BYU the probability that any random person on campus will accept a date tonight is a uniform random variable, Y, distributed from 0.1 to 0.2. The probability that he/she will accept is independent of previous and other requests. Suppose you pick a person on campus and you ask them for a date repeatedly *until* they accept. The number of times that you ask this person is given by the random variable X.
What is $E[X|Y]$?

What is $E[X]$, i.e. the number of times you expect to ask tonight?

2. Suppose you have X and Y be independent Poisson random variables with mean of 2 and 3 respectively. Let $Z = X + Y$.
What is the distribution of Z?
   Note: For a Poisson random variable with parameter λ, the transform is $M_X(s) = e^{\lambda(e^s - 1)}$, $(s < \lambda)$.

3. Suppose I have the following transform:

$$M_X(s) = \frac{1}{2}e^{2s} + \frac{1}{6}e^{3s} + \frac{1}{3}e^{5s}$$

What is $E[X]$?

What is $E[X^2]$?

What is $p_X(3)$?