MATH 2P82   Assignment 0

1. At a certain busy intersection accidents happen at an average rate of 12.3 per week. Compute the expected value and standard deviation of the number of accidents to happen during the next 3 days. What is the probability of more than 4 accidents happening during those 3 days?

2. From the standard deck of 52 cards, a 7 card hand is randomly dealt. Compute the expected value and standard deviation of the number of spades in this hand. What is the probability of getting no spades?

3. The probability that a person vaccinated against the flu experiences an adverse reaction is 12% (hypothetical, not based on real data). If 20 people in a doctor's waiting room are to be vaccinated, find the expected value and standard deviation of how many of them will have an adverse reaction. What is the probability that it will be more than four?

4. Mr.A receives e-mail messages at a constant (i.e. day and night) rate of 116 per day (24 hours). Find the probability that he has to wait for his next message more than 13 minutes. If it's 8 o'clock, what is the probability that the third message from now will arrive between 8:30 and 8:45?

5. Suppose X has the Normal distribution with $\mu = 15$ and $\sigma = 3.2$.

   (a) Compute
   $$\Pr(X > 20)$$

   (b) Using Maple, generate 1000 numbers from this distribution and count (with Maple's help) how many of them are bigger than 20.

   Are you satisfied with the agreement between the two answers? What is the distribution of the 'count' in Part (b)?