STA220H1 Additional Problems for Probability: Events Module

1. If a woman takes an early pregnancy test, she will either test positive, meaning that the test says she is pregnant, or test negative, meaning that the test says she is not pregnant. Suppose that if a woman really is pregnant, there is a 98% chance that she will test positive. Also, suppose that if a woman really is not pregnant, there is is 99% chance that she will test negative.

   (a) Suppose that 1,000 women take early pregnancy tests and that 100 of them really are pregnant. What is the probability that a randomly chosen woman from this group will test positive?

   (b) Suppose that a woman from the group in (a) tests positive. What is the probability that she really is pregnant?

2. Suppose you know that $P(A) = .4$ and $P(B) = .1$. What additional information do you need to calculate $P(A \text{ and } B)$?

3. The probability distribution of the number of trees that a certain disease kills every year is given in the following table:

Number of trees killed				
0	1-9	10-15	16-25	>25
	0.25	0.20	0.15	0.10

   (a) What is the probability that no trees are killed in a year due to the disease?