Math 109, More Practice with Conditional Probability

Name:	
1	1. Which conditional probability do you think is higher: (a) the probability that a college student in the South Bend/Mishawaka area is a Christian, given that the student attends Bethel or (b) the probability that a Christian college student in the South Bend/Mishawaka area attends Bethel?
4	2. Which conditional probability do you think is higher: (a) the probability that an athlete at Bethel has a concussion, or (b) the probability that a concussed student at Bethel is an athlete?
÷	3. A test for malaria has a true positive rate of 95% (meaning that 95% of those who have malaria test positive for malaria). A person in the United States tests positive for malaria. Which of the following is a reasonable conclusion, given the information provided?

(b) We do not have enough information to determine how likely it is that the person has malaria. In fact, given that malaria is rare in the United States, it seems quite possible that the test result is a false positive.

- 4. A survey shows that 71% of adults in the U.S. under the age of 35 consider themselves to be liberal, politically. An adult in the U.S. is randomly selected to give their political opinions on a talk show. Given that this person is under 35 years of age, which of the following is a reasonable opinion:
 - (a) It is likely that the person considers himself or herself to be politically liberal, given that most (71% of) U.S. adults in his or her age group do.
 - (b) We do not have enough information to determine how likely it is that the person considers himself or herself to be politically liberal.

- 5. The Pew Research Foundation conducted a survey of parents and their teens. They found 80% of the Evangelical Protestant parents' teenage children share the same religious beliefs (i.e. their teens also identify as Evangelical Protestant). You have just met a Christian couple who shared with you how happy they are that their teenage child has embraced their (the parents') faith. Which of the following is reasonable?
 - (a) It is likely that the couple is Evangelical Protestant, since most (80% of) parents whose teens have the same faith as themselves are Evangelical Protestant.
 - (b) We do not have enough information to determine how likely it is that the couple is Evangelical Protestant. We would like to know what percentage of parents (of teens) have teens who identify with the same religious group.