

King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 131- Test 5

Exercise 1 *A certain virus infects one in every 200 people. A test used to detect the virus in a person is positive 80% of the time if the person has the virus and 10% of the time if the person does not have the virus. (This 10% result is called a false positive.) Let A be the event "the person is infected" and B be the event "the person tests positive".*

- a) *Find the probability that a person has the virus given that they have tested positive, i.e. find $P(A|B)$*
- b) *Find the probability that a person does not have the virus given that they test negative, i.e., find $P(A'|B')$.*

Exercise 2 *1 percent of a certain company's life insurance policy holders are smokers. For each nonsmoker the probability of dying during the year is 0.001. For each smoker the probability of dying during the year is 0.02. Find the probability that a policy holder who died last year was a smoker*