Math 10B with Professor Stankova
Quiz 5; Tuesday, 2/26/2019
Section #206; Time: 9:30 AM
GSI name: Roy Zhao **Name:** _____

Circle True or False or leave blank. (1 point for correct answer, -1 for incorrect answer, 0 if left blank)

1. True False If $A \subset B$, then $P(B|A) = 1$ (assuming all quantities are well defined).

2. True False If $P(A), P(B) \neq 0$, then $P(A|B) = P(B|A)$.

Show your work and justify your answers. Please circle or box your final answer.

3. (10 points) Suppose a new cancer test has a 90% chance of correctly identifying that a sick patient has cancer and a 10% chance of incorrectly identifying that a healthy patient has cancer. Assume that 20% of the population has this form of cancer.

   (a) (2 points) Let A be the event that a random person has cancer and B being the event that a person tests positive for cancer. Write the probabilities you are given in terms of A and B.

   (b) (3 points) What is the probability that the test says a random person has cancer?

   (c) (5 points) What is the probability that a person who tests positive has cancer?