CS 1511 Homework 22

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43.

44 a. Alice can perform rotations that are multiples of $\pi/4$. Take the value of x and y combined and use those to determine how many degrees to rotate the qubit by. Say x=0, y=0, then rotate the qubit by 0 degrees. x=0, y=1, then rotate by $\pi/4$ degrees. If x =1 y=0, rotate by $2\pi/4$. If x = 1, y = 1, rotate by $3\pi/4$ degrees.

44 b. The state of b will be unchanged, because Alice performed rotations only on the first qubit. The state of a will now be dependent on the value of x and y.

44 c.