This is an ungraded exercise, but it counts towards your participation. We’ll pick some representative papers among your solutions to go over in the writing workshop in Friday 9/17/2021. Please upload your solution to Canvas by midnight of Wednesday 9/15/2021. Note that you should work individually for this exercise, and your paper should be anonymous so that it can be shown to your classmates.

1. (5 points) In class, we learned about the dating problem and the 5-card trick. Prove that the trick protects the privacy of Bob.

   **Note:** In Latex, you can write ♦ and ♣ using the commands `\heartsuit` and `\clubsuit` respectively.