CSCI 305, Homework # 4

YOUR NAME HERE

Due date: Friday, May 11, Midnight

Explain the reasoning behind each answer.

1. Suppose we shuffle a deck of 10 cards, each bearing a distinct number from 1 to 10, to mix the cards thoroughly. We then remove three cards, one at a time, from the deck. What is the probability that we select the three cards in sorted (increasing) order?

2. Use indicator random variables to solve the following problem, known as the **hat-check problem**. Each of n customers gives a hat to a hat-check person at a restaurant. The hat-check person gives the hats back to the customers in a random order. What is the expected number of customers who get back their own hat?