HW 3: due Monday, April 3

1. Two little probability questions
   
   (a) From the formal definitions, show that if there is a Las Vegas randomized algorithm for a problem, that this algorithm can be converted to a Monte Carlo algorithm.

   (b) Prove Chebychev’s inequality using Markov’s inequality

2. We considered $n$ jobs \{${j_1, \ldots, j_n}$\} that take processing times \{${p_1, \ldots, p_n}$\} each of which must be scheduled, without interruption on one of a on a set of $m$ identical machines. We wish to find the schedule that completes the final job in the soonest amount of time. We considered the greedy scheduling algorithm, which orders the jobs arbitrarily, and then schedules the next job on the next available machine, and showed that it gave a $2$-approximation to the optimal schedule. Show that in fact it gives a $2 - 1/m$-approximation to the optimal schedule, where $m$ is the number of machines.