

Exercise 1.4 Multivariate Probability Distributions and Expectations

Instructions: You may discuss this assignment with other students in the class, but you must submit your own answers to the questions below. Include an honor pledge with your submission. Submit online and in pdf. This exercise is ungraded.

1. If X and Y are independent binomial random variables, each with parameters n, p find $P[X = x]$ given that $X + Y = m$.
2. For independent binomial trials with $P(X_i = 1) = p, i = 1, \dots, M$, and M the number of trials until the first 1, find $Var(M)$.