## CS 333202: Probability and Statistics HW12 Part III

- 1. Let X, Y, and Z be three independent Poisson random variables with parameters  $\lambda_1$ ,  $\lambda_2$ , and  $\lambda_3$ , respectively. For y = 0, 1, 2, ..., t, calculate  $P(Y = y \mid X + Y + Z = t).$
- 2. Mr. Watkins is at a train station, waiting to make a phone call. There is only one public telephone booth, and it is being used by someone. Another person ahead of Mr.Watkins is also waiting to call. If the duration of each telephone call is an exponential random variable with  $\lambda = 1/8$ , find the probability that Mr. Watkins should wait at least 12 minutes before being able to call.
- 3. The capacity of an elevator is 2700 pounds. If the weight of a random athlete is normal with mean 225 pounds and standard deviation 25, what is the probability that the elevator can safely carry 12 random athletes?