寫在A4紙上. 110321054 陳[illegible]綾

CSIE Probability Homework 1 Due: Mar 22, 2022

1. 2.1.8 (15pts)

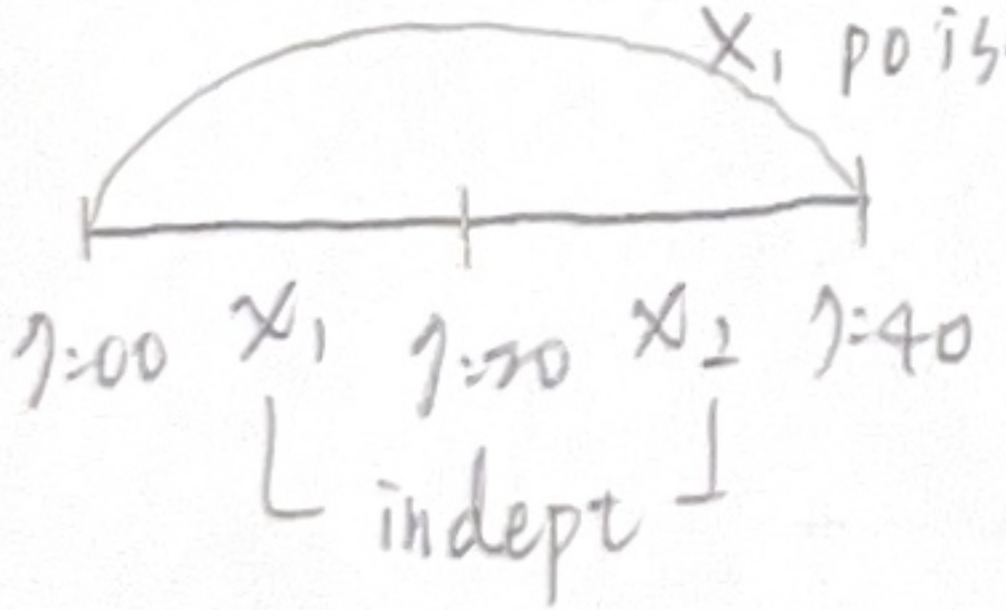
2. Roll a fair eight-sided die four times. The outcome is independent from roll to roll. Let X_k = the outcome of the k-th roll, $k = 1, 2, 3, 4$.

   (a) Find the probability $P[\max\{X_1, X_2, X_3, X_4\} = 7]$.

   (b) Find the probability $P[\min\{X_1, X_2, X_3, X_4\} < 3]$. (20pts)

   $1 - P[\min\{X_1, X_2, X_3, X_4\} \geq 3]$

3. At a bus station, the number X of the buses arriving during 7:00-7:40am is a Poisson random variable with $E[X] = 4$. Find the probability that two or more buses show up in the first 20 minutes and no bus shows up in the last 20 minutes. (15pts)



X_1 poisson, $E[X] = 4$: $\alpha = \lambda T$

X_1 $T = 20$, $\alpha = ?$ $P[X_1 \geq 2, X_2 = 0]$

X_2 $T = 20$, $\alpha = ?$ $= P[X_1 \geq 2] \cdot P[X_2 = 0]$