

Problem Set 3*Instructors: Rajesh Sundaresan**TAs: Sowmya, Ram Rathana, Tithi, Yash, Dwaipayan***Remarks:**

- Collaboration, discussion, and working in teams to solve problems is strongly encouraged.
- To test your understanding, practice the solution to each problem in your own words without referring to a friend, text, class notes, or AI engines.

Problems:

1. In Example 1.5(c), take $n = 2$, $i_1 = 1$ and $i_2 = 3$, and verify that the union of intervals is of size $(1/2)^n = 1/4$ for the specific choice of n , and $i_1, \dots, i_n$.
2. Exercise 1.6 of the reference text.
3. Problem 1.6 (Problems on independence).
4. Exercise 1.7 of the reference text.
5. Exercise 1.8 of the reference text.
6. Exercise 1.9 of the reference text.
7. Exercise 1.10 of the reference text.
8. Problem 1.4 (The problem on the variance of an affine transformation of a random variable.)
9. Problem 1.7.
10. Problem 1.8.