Pre-class preparation

Please watch the video:

- Video: Probability axioms
- Note: you could instead read Section 1.6 (stop before Theorem 1.6.3) from the textbook, but I deviate slightly from their axioms

Objectives

By the end of the day's class, students should be able to do the following:

- State the general axiomatic definition of a probability space, and interpret the axioms in everyday language.
- Use the axioms to derive set-theoretic properties of probability, and be able to apply these properties.
- Explain why we require axiomatic probability in addition to the "naive" understanding of probability.

Reflection Questions

Please submit your answers to the following questions to the corresponding Canvas assignment by 9:00AM:

1. Prove the following property of probability using the appropriate probability axioms and properties from the video: Let A be any event from an experiment with sample space S. Then $0 \leq P(A) \leq 1$.
2. You go mushroom foraging and happen to find two mushrooms. Suppose that the probability that the first mushroom is toxic is $\frac{2}{3}$. The probability that the second mushroom is toxic is $\frac{1}{2}$. The probability that both mushrooms are toxic is $\frac{1}{3}$. What is the probability that neither mushroom is toxic?
3. (Optional) Is there anything from the pre-class preparation that you have questions about? What topics would you like would you like some more clarification on?