

Topics for Exam 2

1. Random Variables

- 1.1. Continuous and discrete random variables
- 1.2. Cumulative distribution function (cdf)
- 1.3. Probability density function (pdf) and probability mass function (pmf)

2. Examples of Random Variables

- 2.1. Discrete random variables: Discrete Uniform, Bernoulli, Binomial, Geometric, Hypergeometric and Poisson
- 2.2. Continuous random variables: Uniform and Exponential

3. Expectations of Random Variables

- 3.1. Expected Value a random variable
- 3.2. Expected value of functions of random variables
- 3.3. Moments and variance

Relevant Sections in Lecture Notes: 4.1, 4.2, 5.1, 5.2, and 5.4

Relevant sections in the Text: 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 5.2, 5.3 and 5.4

Relevant assignments: 7, 8, 9, 10, 11 and 12.

Important Concepts

Random variable, continuous and discrete random variables, cumulative distribution function (cdf), probability mass function (pmf), and probability density function (pdf), Expectation, moments, variance, independent random variables.

Important Skills

1. Know how to compute the cdf and the pdf (or pmf) of a random variable.
2. Know how to compute expectations, moments and variance of random variables