

Math 20

Exam 1 Topics

Exam Date: July 23

The following is a list of topics covered on Exam 1:

- Basic discrete probability vocab; sample spaces, distribution function, random variables
- Basic set theory constructions and relationship with probability; e.g. $P(\tilde{A}) = 1 - P(A)$
- Basic continuous probability vocabulary; samples spaces, random variables, density function of a \mathbb{R} -valued random variable
- Exponential density
- Cumulative distribution function of a continuous random variable (and its relationship with the density function)
- Counting and permutations
- Asymptotic equivalence; Stirling's formula
- Binomial coefficients and their properties; counting combinations
- Binomial Theorem and corollaries
- Bernoulli trials processes; the binomial distribution
- Law of inclusion/exclusion
- Conditional probability, Bayes' Law
- Independence of events; independence of random variables
- Tree diagrams
- Bayes' formula, hypothesis testing
- Continuous conditional probability; joint cumulative distributions and mutually independent continuous random variables