

# Discrete Mathematics Journal

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In this week we will continue studying counting. Due to the unfortunate missed class last Tuesday, assignment-7 posted in Week-8 will be served as a drill. Do not submit it. Also in the supplements folders of Week-7 and Week-8 I posted drills. We shall try to cover as many problems from them as we can next Tuesday (we may stay longer than 1 hour, time permitting).

1. The 2 hours mid-term will take place during class on Thursday, 10 Nov.
2. Topic list:
  - a. Logic:
    3. 1. Propositions, compound propositions.
    2. Boolean variables.
    3. Logic operators, truth tables.
    4. Disjunctions, conjunctions, logic equivalence, functionally complete operators.
    5. Logic gates.
  - b. Sets
    1. Sets notation, set builder.
    2. Set operations, Venn diagrams.
    3. Cardinality, finite and infinite sets.
    4. Countable and non-countable sets.
    5. Finite sets and linear algebra. Using finite fields to construct families of sets.
    6. Relations
    7. Functions, 1 – 1, onto, bijections.
  - c. Counting.
    1. Intuitive counting.

2. Sum, Product, Inclusion-Exclusion, Pigeon-Hole principles.
3. Permutations, Binomial coefficients.
4. Everything in the lecture notes or the supplements is “fair game.”