

2.3-4: Functions, Sequences & Summations

- Given one or more functions, determine
 - the domain and range
 - whether it is injective, surjective, or bijective
 - its inverse, if it exists
 - the composition of two functions
 - the value of the function at some given x
- Understand the floor and ceiling function
- Given a sequence
 - find first n terms (e.g., find the first 5 terms)
 - find the n -th term (e.g., find the 100th term)
- Find the value of a simple summation

5.1,3: Induction and Recursion

- Proof by mathematical induction (review guidelines)
- Give a recursive definition of set or function

6.1-4 Counting

- Use the (general) pigeonhole principle
- Apply the product rule or sum rule
- Find the number of combinations or permutations
- Binomial Theorem
 - find the expansion of a binomial expression
 - find a coefficient of some term in a binomial expansion
- Show that a combinatorial identity holds using a combinatorial proof or algebraic manipulation

7.1,2,4 Discrete Probability

- Find the probability of one or more events occurring
 - if outcomes are equally likely or not equally likely
 - using the complement of the event
- Find the probability of an event A or event B occurring (union of events)
- Find the probability of an event A given F
- Determine if two events are independent
- The probability of exactly k successes in n independent Bernoulli trials

Graphs (parts of ch. 10)

- Given a small graph
 - Find and describe a Eulerian path/cycle if it exists (if possible)
 - Explain why a Eulerian path/cycle cannot exist (if not possible)
- Given a small degree sequence
 - Construct a simple graph (if possible)
 - Explain why a simple graph could not be constructed (if not possible)