

Discrete Structures for CS Midterm Study Guide

- Given the domain, propositional variables/functions, compound expression, quantifiers, set notation
 - express the statement in English
 - express the negation in English
 - determine the truth value
- Given an English statement express it by specifying the domain and using propositional variables/functions, compound expressions, quantifiers, set notation
 - express the statement with a broad domain
 - express the statement with a restricted domain
 - express the negation, such that no negation precedes a quantifier
 - determine the truth value
- Given a compound expression, construct a truth table.
- Given an implication, state the converse, inverse, and contrapositive.
- Show in at least two different ways (using truth tables and using logical identities) that
 - two compound propositions are equivalent
 - a compound proposition is a tautology or a contradiction
- Given an argument
 - what rule of inference is used
 - find the error(s)
- Given premises, obtain a conclusion and state the rule of inference.
- Given a statement (implication or biconditional)
 - prove it using a direct proof
 - prove it using proof by contraposition
 - prove it using proof by contradiction
 - prove it using proof by cases
 - disprove it by providing a counterexample
- Given two or more sets
 - find the cardinality
 - find the power set, cartesian product
 - draw a venn diagram
 - determine if a set is a subset of the other
 - find the union, intersection, difference, complement
- Show that two sets are equal using
 - containment proof (left set is subset of right set, right set is subset of left set)
 - set-builder notation and propositional logic
 - element table proof