

University of South Carolina  
Math 574: Discrete Mathematics I  
Section 001  
Summer I 2012

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Homework Set 2

Pre-Class Homework Due: 5-29

Post-Class Homework Due: 6-6

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Section 2.3 - Valid and Invalid Arguments

Before Class

- Read pages 51–54 (through Example 2.3.2).
- Suppose you believe the following statement is true: “If you are a college student, then you are an alcoholic.” Show what you could logically derive (if anything) from the following facts using modus ponens or modus tollens.
  1. Alice is a college student.
  2. Bob is not a college student.
  3. Chris is an alcoholic.
  4. Danielle is not an alcoholic.

After Class

- # 4, 12, 24, 29, 30
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Section 3.1 - Predicates and Quantified Statements I

Before Class

- Read pages 96–100 (through Example 3.1.4).
- Let  $D = \{-1, 0, 1\}$  and let  $P(x)$  be the predicate  $x \geq 0$ . Write each of the following statements in English and decide whether it is true or false. (If you are not familiar with the notation of set theory, take a look at Section 1.2.)
  1.  $\forall x \in D, P(x)$
  2.  $\exists x \in D$  such that  $P(x)$

After Class

- # 1, 5, 10, 18, 23, 26