



INTRO TO ABSTRACT MATH  
FALL 2009

HOMEWORK 12  
DUE OCTOBER 2

**Exercise 34.** Let  $A_i$ ,  $i \in I$ , be an indexed family of sets. Prove the second half of DeMorgan's Law:

$$\left( \bigcap_{i \in I} A_i \right)^c = \bigcup_{i \in I} A_i^c.$$

**Exercise 35.** Let  $I = \{3, 4, 5\}$ , and for each  $i \in I$  let  $A_i = \{i, i + 1, i + 2, 3i\}$ . Find  $\bigcap_{i \in I} A_i$  and  $\bigcup_{i \in I} A_i$ .

**Exercise 36.** Let  $A_i$ ,  $i \in I$ , be an indexed family of sets. If  $B$  is any set, prove that

$$B \cap \left( \bigcup_{i \in I} A_i \right) = \bigcup_{i \in I} (B \cap A_i).$$