## Introduction to Set Theory

#### Chapter 1. Sets 1.4. Elementary Operations on Sets—Proofs of Theorems

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## Theorem 1.4.A

**Theorem 1.4.A.** Let A, B, and C be sets. Then (Distributivity):  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C).$ 

<span id="page-2-0"></span>**Proof.** Let  $x \in A \cap (B \cup C)$ . Then  $x \in A$  and  $x \in B \cup C$ . Therefore,  $x \in A$  and either  $x \in B$  or  $x \in C$ .

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