

Sets: Basic Definitions

$$A \cup B = \{ x : x \in A \text{ or } x \in B \}$$

$$A \cap B = \{ x : x \in A \text{ and } x \in B \}$$

$$\bar{A} = \{ x : x \notin A \}$$

$$A - B = \{ x : x \in A \text{ and } x \notin B \}$$

$$A \times B = \{ (x, y) : x \in A \text{ and } y \in B \}$$

$$\bigcup_{i=1}^n A_i = \{ x : x \in A_i \text{ for some } i, 1 \leq i \leq n \}$$

$$\bigcup_{i=1}^{\infty} A_i = \{ x : x \in A_i \text{ for some } i \}$$

$$\bigcap_{i=1}^n A_i = \{ x : x \in A_i \text{ for each } i, 1 \leq i \leq n \}$$

$$\bigcap_{i=1}^{\infty} A_i = \{ x : x \in A_i \text{ for each } i \}$$

$$\bigcup_{\alpha \in M} A_{\alpha} = \{ x : x \in A_{\alpha} \text{ for some } \alpha \text{ in } M \}$$

$$\bigcap_{\alpha \in M} A_{\alpha} = \{ x : x \in A_{\alpha} \text{ for each } \alpha \text{ in } M \}$$