

## Section 1.3: cont'd

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2:29 PM

$$\text{let } A = \{1, 2, 3\}, \quad B = \{2, 4, 6\}, \quad \text{and} \\ C = \{3, 6, 9\}$$

$$\text{find } A \cup (B \cap C) = \{1, 2, 3, 6\}$$

$$B \cap C = \{6\}$$

$$(A \cup B) \cap C = \{1, 2, 3, 4, 6\} \cap C \\ = \{3, 6\}$$

negation of sets:

$$\text{let } A = \{1, 3, 5\}$$

what is  $\bar{A}$ ?

↑  
"not A"

to find out what  $\bar{A}$  is, we first need  
to define what "everything" is

by defining the universal set  $U$

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example: let  $A = \{1, 3, 5\}$ ,  $B = \{2, 3, 4\}$ , and  $U = \{1, 2, 3, \dots, 7\}$

find

$$\bar{A} = \{2, 4, 6, 7\}$$

$$\bar{B} = \{1, 5, 6, 7\}$$

$$A \cup \bar{A} = U$$

$$\bar{B} \cap B = \emptyset$$

$$\bar{A} \cup B = \{2, 3, 4, 6, 7\}$$

$$\bar{A} \cup U = U$$

$$\bar{B} \cap U = \bar{B}$$

$$\overline{\bar{A} \cup \bar{B}} = \{3\}$$

$$\bar{A} \cup \bar{B} = \{1, 2, 4, 5, 6, 7\}$$

example: let  $A = \{1, 2\}$  and  $U = \{1, 2, 3\}$

find  $\bar{A} = \{3\}$

$$\bar{\bar{A}} = \{1, 2\} = A$$

$$\overline{\overline{\bar{A}}} = \bar{A}$$

$$\overline{\overline{\overline{\bar{A}}}} = \bar{\bar{A}} = A$$