

OR

$$\{x \mid x > 3 \text{ OR } x < 7\}$$

$$= (-\infty, 3) \cup (7, \infty)$$

$$= (-\infty, \infty)$$

AND

$$\{x \mid x > 3 \text{ AND } x < 7\}$$

$$= (3, 7)$$

$$= (-\infty, 7) \cap (3, \infty)$$

$$\{x \mid x < 3 \text{ OR } x > 7\}$$

$$= (-\infty, 3) \cup (7, \infty)$$

$$\{x \mid x < 3 \text{ AND } x > 7\}$$

$$= (-\infty, 3) \cap (7, \infty)$$

$$= \emptyset$$