

7. UNIONS AND INTERSECTIONS

- (1) For every positive $r \in \mathbb{R}$, define the set $A_r := [-r, r]$. Tell me what the set

$$\bigcap_{r \in \mathbb{R}, r > 0} A_r$$

is.

- (2) For every positive $r \in \mathbb{R}$, define the set $U_r := (7 - r, 7 + r)$. Tell me what the set

$$\bigcap_{r \in \mathbb{R}, r > 0} U_r$$

is.

- (3) Tell me what the set

$$\bigcup_{r \in \mathbb{R}, r > 0} U_r$$

is.

- (4) Tell me what the set

$$\bigcup_{n \in \mathbb{Z}} [n, n + 1]$$

is.