

$$\tau_\infty = \{u \subseteq X \mid u^c \text{ infinite or } X \text{ or } \emptyset\}$$

$$\emptyset, X \text{ in } \tau_\infty$$

$$\bigcap_{i \in I} \tau_i = \bigcup_{i \in I} \tau_i^c \leftarrow \text{should all be infinite}$$

$$\bigcup_{i \in I} \tau_i = \bigcap_{i \in I} (\tau_i^c)^c$$

$$\left[\frac{1}{n}, \frac{1}{n} \right], = \left(\left(-\infty, \frac{1}{n} \right) \cup \left(\frac{1}{n}, \infty \right) \right)^c$$

$$\bigcup_{n=1}^{\infty} \left(-\infty, \frac{1}{n} \right) \cup \left(\frac{1}{n}, \infty \right)$$

