

SOME PROBLEMS ON SETS

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(1) Simplify

$$\bigcap_{n \in \mathbb{N}} \left[-\frac{1}{n}, 1 + \frac{1}{n}\right] =$$

(2) Let B, I , and A_i for $i \in I$ be sets. Show

$$\left(\bigcup_{i \in I} A_i\right) \cap B = \bigcup_{i \in I} (A_i \cap B)$$

(3) Let A, B, C be sets. Show that

$$A \times (B \cap C) = (A \times B) \cap (A \times C)$$