ProofSpace Comprehension Quiz

Sets

Indexed Sets

Let $A_i = \{x \in \mathbb{N} \mid i < x < 2i\}$ be defined for all $i \in \mathbb{N}$.
Let $I = \{1, 2, 3, 4, 5\}$. Let $J = \{6, 7, 8\}$.

1 Which of the following is the set A_5?

(a) $\{5, 6, 7, 8, 9\}$

(b) $\{5, 6, 7, 8\}$

(c) $\{7\}$

(d) None of the above answers.

2 Which of the following is the set $A_5 \cup A_4$?

(a) $\{6, 7, 8\}$

(b) $\{4, 5, 6, 7, 8, 9, 10\}$

(c) $\{5, 6, 7, 8, 9\}$

(d) None of the above answers.

3 Write out the following sets:

a) $\bigcup_{i \in I} A_i =$ _____

b) $\bigcap_{i \in I} A_i =$ _____

c) $\bigcup_{i \in J} A_i =$ _____

d) $\bigcap_{i \in J} A_i =$ _____

e) $\bigcup_{i \in \mathbb{N}} A_i =$ _____

f) $\bigcap_{i \in \mathbb{N}} A_i =$ _____

g) $(\bigcap_{i \in J} A_i) \times A_1 =$ _____