

Question 10

Teng Long

February 10, 2017

Let $A_n = [0, 1/n]$, obviously $[0, 1/(n+1)] \in [0, 1/n]$, therefore $A_{n+1} \subset A_n$

proposition: for $A_n = [0, 1/n]$, $\bigcap_1^\infty A_n = \emptyset$

proof: prove by contradiction.

1. For any n we have $0 \in A_n$ therefore 0 belongs to intersection (up to infinite sets).

2. same analysis as Q9, for all $x \neq 0$ does not belong to the intersection set.

3. we proved $\bigcap_1^\infty A_n = \emptyset$

conclusion: we proved $\bigcap_1^\infty A_n = \emptyset$ by contradiction