Question 9

(Not sure about this one)

Looking at the set of intervals such that $A_n = \left[-\frac{1}{\sqrt{n}}, +\frac{1}{\sqrt{n}}\right]$where n ϵ prime numbers.

This means that the (n + 1)th interval would be smaller than the nth interval but still a subset of it.

So $A_{n+1} \subset A_n$.

However, there would also be no intersection (caused by the endpoints) because there is no circumstance such that $A_n=\{x|(\forall n)(x\in A_n)\}$ could apply.

So $\cap_{n=1}^{\infty} A_n = \emptyset$.