

QUESTION 9.

$$\text{Let } A_n = (0, \frac{1}{n})$$

1. For  $A_{n+1} \subset A_n$ ,

$$A_{n+1} = (0, \frac{1}{n+1})$$

$$A_n = (0, \frac{1}{n})$$

$$\text{because } \frac{1}{n+1} < \frac{1}{n}$$

$$\text{thus: } (0, \frac{1}{n+1}) \subset (0, \frac{1}{n}).$$

2. the limit of  $\frac{1}{n}$  is 0,

$$\bigcap_{n=1}^{\infty} A_n = (0, 0)$$

$$\text{thus: } \bigcap_{n=1}^{\infty} A_n = \emptyset$$

so, the example  $A_n = (0, \frac{1}{n})$  ~~satisfies~~ satisfies the stated property.