

Quiz/HW 3

Please, write clearly and justify your steps to get credit for your work.

[10 Pts] Mark each statement as True or False. If False, show a counter-example. If True, justify your answer.

- (a) Every non-empty open set contains at least two points.
- (b) The set  $S = \{\frac{1}{n} : n \in \mathbb{N}\}$  is closed.
- (c) If  $S$  is unbounded then  $S$  has an accumulation point.
- (d) If  $S \subset \mathbb{R}$  is open and  $x$  is an accumulation point of  $S$ , then  $x \in S$ .
- (e) If  $S \subset \mathbb{R}$  is a closed, then there is at least one point in  $\mathbb{R}$  that is an accumulation point of  $S$ .