Math 3333   Name:

<u>Quiz/HW 3</u>

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

(2) [12 Pts] Mark each statement as True or False. If False, show a counter-example. If True, justify your answer.

(a) Every intersection of bounded and closed sets is compact.

(b) The set $S = \{\frac{1}{n} : n \in \mathbb{N}\}$ is compact.

(c) If S is unbounded then S has an accumulation point.

(d) If $S \subset \mathbb{R}$ is compact and x is an accumulation point of S, then $x \in S$.

(e) If $S \subset \mathbb{R}$ is a compact, then there is at least one point in $\mathbb{R}$ that is an accumulation point of S.

(f) If a set S has a maximum and a minimum, then S is a closed set.