Quiz 2 Math 341

Name _____

Let $S = \{3 - \frac{2}{n}, n = 1, 2...\}$

What is the supremum of S?

Use one of the four equivalent criteria to justify your answer.

Solution.

Note that for every $n \in N, 3 - \frac{2}{n} < 3$, which means that 3 is an upper bound of S.

According to Criterion 4 (on page 38 of the textbook), given any $\epsilon > 0$, we have to find an n so that $3 - \frac{2}{n} > 3 - \epsilon$. This is equivalent to $-\frac{2}{n} > -\epsilon$ or $n > \frac{2}{\epsilon}$

Since such an n can be found, it follows that $3 = \sup S$