> Please show **all** your work! Answers without supporting work will not be given credit.
> **Clearly mention what theorem(s), if any, you are using.**
> Write answers in spaces provided.
> You have 15 minutes to complete this Quiz.
> You can get MAXIMUM $7 + 8$ marks.

Name:

1. Prove that the *least upper bound* of a set of negative number cannot be positive.

2. Let $\{a_n\}_{n\in\mathbb{N}}$ be an *increasing and convergent* sequence defined by the recurrence relation

$$a_n = 4 - \frac{3}{a_{n-1}}, \quad a_1 = 2$$

   Find all possible values of $\lim\limits_{n\to\infty} a_n$.