Presentation Assignment 1

Let p be a prime number. Define $A = \{x \in \mathbf{Q}^+ : x^2 < p\}$ and $B = \{x \in \mathbf{Q}^+ : x^2 > p\}$, where $\mathbf{Q}^+$ denotes the set of all nonnegative rational numbers.

1. Show that every element in B is bigger than every element in A.

2. Does A have a smallest (largest) element? Is A bounded below (above)?

3. Does B have a smallest (largest) element? Is A bounded below (above)?

Be able to justify your answers.