

Roll Number and Name:

Section:

**Note:** Justify your answers.

Recall that  $\mathbb{R}_+^* \stackrel{\text{def}}{=} (0, +\infty)$  is the set of positive real numbers (*i.e.*  $\mathbb{R}_+^* = \{x : x \in \mathbb{R}, x > 0\}$ ).  
Let  $a, b \in \mathbb{R}_+^*$  ( $a > 0, b > 0$ ).

Consider the set  $E = \left\{ (-1)^n a + \frac{b}{n} : n \in \mathbb{N}^* \right\}$ . (Of course  $E \subset \mathbb{R}$ .)

1. (for A group) Determine (if they exist) the **maximum**, the **supremum**, and *one upper bound* of this set  $E$ .
2. (for B group) Determine (if they exist) the **minimum**, the **infimum**, and *one lower bound* of this set  $E$ .

**Answer:**