to zero, we see that it ...
positive number.

- $\boxed{\text{Theorem 2.1.9:}}$ If $a \in \mathbb{R}$ is such that $0 \leq a < \varepsilon$ for every $\varepsilon > 0$, then $a = 0$.

$\boxed{\text{Proof:}}$ • Suppose, $a > 0$. Let, $a < \varepsilon$ for every $\varepsilon > 0$. $\therefore$ If $\varepsilon_0 = \frac{1}{2}a$, by our prev claim, $\frac{1}{2}a = \varepsilon < a$, which is a contradiction

$\therefore a = 0$

- $\boxed{\text{Theorem 2.1.10:}}$ If $ab > 0$, then either i) $a > 0$ and $b > 0$, or ii) $a < 0$ and $b < 0$

$\boxed{\text{Proof:}}$ • 1. Given, $ab > 0$ 2. By trichotomy order property, ~~either~~ exactly one of the following hold: $a \in P$, $a = 0$, $-a \in P$