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(7) If A and B are two non-empty subset of $\mathbb{R}$. Then $A \cup B$ and $A \cap B (\neq \phi)$ are bdd and.

(a) $\sup(A \cup B) = \max\{\sup A, \sup B\}$ ~~multip~~ B

∪ पर equality

(b) $\inf(A \cup B) = \min\{\inf A, \inf B\}$; पर लगता है

(c) $\sup(A \cap B) \leq \min\{\sup A, \sup B\}$ multip

∩ inequality

(d) $\inf(A \cap B) \geq \max\{\inf A, \inf B\}$. पर लगता है।

(8) If A and B are two non empty bounded subset of $\mathbb{R}$. and

$$A - B = \{a - b : a \in A, b \in B\}$$

Then

(a) $\sup(A-B) = \sup A - \inf(B)$

(b) $\inf(A-B) = \inf A + \inf(-B) = \inf A - \sup(B)$

(9) If A and B are two non-empty bdd subsets of $\mathbb{R}$ and

$$AB = \{ab : a \in A, b \in B\}.$$

Then

(a) $\sup(AB) \geq \sup A \sup B$

(b) $\inf(AB) \leq \inf A \cdot \inf B$.

(10) If A and B are bdd subset of $\mathbb{R}$ then

$\sup(AB) = \max\{\sup A \cdot \sup B, \sup A \inf B, \inf A \sup B, \inf A \cdot \inf B\}$

(11) If A and B are two non-empty subset of the real numbers then $\sup(AB) = \sup A \cdot \sup B$

(12) (a) The set $\{x : x \in \mathbb{Q}, x > 0 \; \& \; x^2 < 3\}$ doesnot have l.u.b in $\mathbb{Q}$. ($\because$ $0 < x < \sqrt{3}$ & $\sqrt{3} \notin \mathbb{Q}$.)

(b) The set $\{x : x \in \mathbb{Q}, x > 0 \; \& \; x^2 < 5\}$ does not have l.u.b in $\mathbb{Q}$. ; $\sqrt{5} \notin \mathbb{Q}$

L-5).

(13)(a) If u is upper bound of a set $A \; (\subseteq \mathbb{R})$ and $u \in A$, then

$$u = \underset{\sup(A)}{l.u.b(A)} = \max(A).$$

(b) If l is a lower bound of set $A \; (\subseteq \mathbb{R})$ ~~then~~ & $l \in A$ then

$$l = \underset{\text{or } \inf(A)}{g.l.b(A)} = \min(A).$$

Exercise (1.2)