

prove that- $A \times (B \cap C) = (A \times B) \cap (A \times C)$

Let A,B,C be any three sets, then prove that-
 $A \times (B \cap C) = (A \times B) \cap (A \times C)$

$(x,y) \in A \times (B \cap C)$
 $x \in A$ and $(y \in (B \cap C))$
 $x \in A$ and $(y \in B$ and $y \in C)$
 $(x \in A$ and $y \in B)$ and $(x \in A$ and $y \in C)$
 $(x,y) \in (A \times B)$ and $(x,y) \in (A \times C)$ // by Cartesian Product.

$(x,y) \in (A \times B) \cap (A \times C)$

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1. SET
2. Mathematical induction
3. Relation
4. Net 34
5. Prove that- $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
6. prove that - $(A \cap B) \times (C \cap D) = (A \times C) \cap (B \times D)$
7. Show that- $(P \cap Q) \times (R \cap S) = (P \times R) \cap (Q \times S)$
8. Binary operations
9. Algebraic structure
10. Group
11. Show that $\{ \dots, -4, -3, -2, -1, 0, 1, 2, 3, 4, \dots \}$ is group
12. Show that $a * b = b * a$
13. if $a * c = c * a$ and $b * c = c * b$, then $(a * b) * c = c * (a * b)$
14. Undirected Graph and Incident Matrix

prove that- $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

15. Prove the following by using the principle of mathematical induction for all $n \in \mathbb{N}$, $1^3 + 2^3 + 3^3 + \dots + n^3 = [n(n+1)/2]^2$
16. Prove that $G = \{-1, 1, i, -i\}$ is a group under multiplication.
17. Hasse diagram for the "less than or equal to" relation on the set $S = \{0, 1, 2, 3, 4, 5\}$