

**** prove that $m^2 = n^2$ if and only if $m = n$ or $m = -n$**
where m and n are real number.

First prove: If $m^2 = n^2$ then $m = n$ or $m = -n$

Hypothesis: $m^2 = n^2$

conclusion: $m = n$ or $m = -n$

Let $m^2 = n^2$

$$\Rightarrow m^2 - n^2 = 0$$

$$\Rightarrow (m+n)(m-n) = 0$$

$$\text{So, } m+n=0 \quad \text{or } m-n=0$$

$$\therefore m = -n \quad \text{or } m = n$$

Again: If $m = n$ or $m = -n$ then $m^2 = n^2$

Hypothesis: $m = n$ or $m = -n$

conclusion: $m^2 = n^2$

Let $m = n$ or $m = -n$

$$\Rightarrow m^2 = n^2 \quad \text{or } \Rightarrow m^2 = (-n)^2$$

$$\Rightarrow m^2 = n^2$$

[squaring both sides]

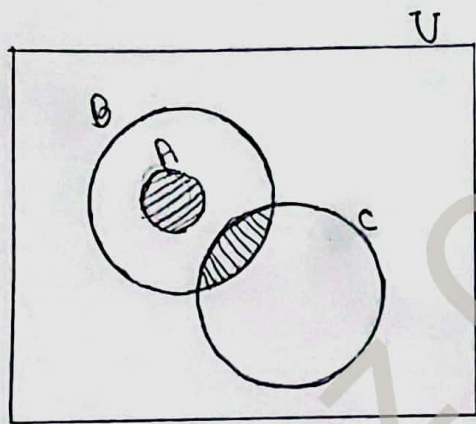
Therefore, $m^2 = n^2$ if and only if $m = n$ or $m = -n$

(proved)

** Given that $A \subseteq B$, and A and C are disjoint

** Given that $A \subseteq B$ and A and C are disjoint, show the following sets in a Venn diagram.

① $(B \cap C) \cup A$



② $A' \cap (B \cup C)$

