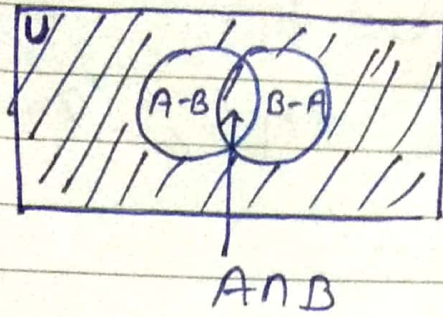


31/08/xx

Class-XI^{sc} (MATHS)

K. Kanhaiya



Practical problems on Union and Intersection of two sets.

Let A and B are finite sets then

$$(i) \quad n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

if $A \cap B = \phi$, then

$$n(A \cup B) = n(A) + n(B).$$

$$(ii) \quad n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(A \cap C) + n(A \cap B \cap C).$$

(1) If X and Y are two sets such that $X \cup Y$ has 50 elements, X has 28 elements and Y has 32 elements, how many elements does $X \cap Y$ have?

It is given that
 $n(X \cup Y) = 50$, $n(X) = 28$,
 $n(Y) = 32$, $n(X \cap Y) = ?$

We have

$$n(X \cup Y) = n(X) + n(Y) - n(X \cap Y)$$

$$50 = 28 + 32 - n(X \cap Y)$$

$$n(X \cap Y) = 60 - 50$$

$$= 10.$$

(2) If X and Y are two sets such that
 $n(X) = 17$, $n(Y) = 23$,
 $n(X \cup Y) = 38$, $n(X \cap Y) = ?$

Ans \rightarrow $n(X \cup Y) = n(X) + n(Y) - n(X \cap Y)$

$$38 = 17 + 23 - n(X \cap Y)$$

$$n(X \cap Y) = 40 - 38$$

$$= 2$$

