Inverse Function.

If $f : A \to B$ be a one-one onto (bijection) function, then the mapping $f^{-1} : B \to A$ which associates each element $b \in B$ with element $a \in A,$ such that $f(a) = b,$ is called the inverse function of the function $f : A \to B$

$f^{-1} : B \to A,\ f^{-1}(b) = a \Rightarrow f(a) = b$

In terms of ordered pairs inverse function is defined as $f^{-1} = (b, a)$ if $(a, b) \in f$.

Note: For the existence of inverse function, it should be one-one and onto.

Important Tips

- *Inverse of a bijection is also a bijection function.*
- *Inverse of a bijection is unique.*
- $(f^{-1})^{-1} = f$
- *If f and g are two bijections such that (gof) exists then* $(gof)^{-1} = f^{-1}og^{-1}$.
- *If* $f: A \to B$ *is a bijection then* $f^{-1}: B \to A$ *is an inverse function of f.* $f^{-1}of = I_A$ *and* $fof^{-1} = I_B$. *Here* I_A, *is an identity function on set A, and* I_B, *is an identity function on set B.*