

Continuity and Compactness

$f: X \rightarrow Y$ is Continuous, 1-1, onto function and X is Compact then $f^{-1}: Y \rightarrow X$ is Continuous.

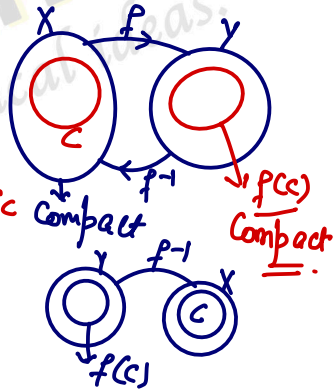
Proof

Let C is closed set in Compact space X .

Closed subset of Compact metric space is also Compact.

$\Rightarrow C$ is Compact.

Continuous image of Compact set is Compact.



$\Rightarrow f(C)$ is Compact subset of Y

So $f(C)$ is closed subset of Y for closed subset C of X .

$f: X \rightarrow Y$ is Continuous iff $f^{-1}(C)$ is closed in X for C closed in Y .

$\Rightarrow f^{-1}: Y \rightarrow X$ is Continuous.