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topologically transitive

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A continuous surjection f on a topological space X to itself is *topologically transitive* if for every pair of open sets U and V in X there is an integer $n > 0$ such that $f^n(U) \cap V \neq \emptyset$, where f^n denotes the n -th iterate of f .

If for every pair of open sets U and V there is an integer N such that $f^n(U) \cap V \neq \emptyset$ for each $n > N$, we say that f is *topologically mixing*.

If X is a compact metric space, then f is topologically transitive if and only if there exists a point $x \in X$ with a dense orbit, i.e. such that $\mathcal{O}(x, f) = \{f^n(x) : n \in \mathbb{N}\}$ is dense in X .