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Transitivity of antitriangular maps

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We consider antitriangular maps, that is, two-dimensional continuous maps of the form F(x, y) = (g(y), f(x)), defined from the unit square into itself. This type of maps appears associated to an economical model so called Cournot duopoly. Recall that a continuous map f from a topological space X into itself is called topologically transitive if for any pair U, V of non-empty open sets of X, there exists a positive integer n such that $f^n(U) \cap V \neq \emptyset$, where f^n means the n-th iterate of f. We try to extend the properties of transitivity from one-dimensional maps to the antitriangular case. We obtain similar conclusions, with some difference as a consequence of dimension two.