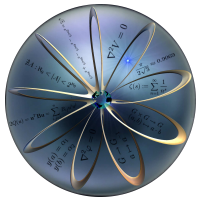

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dense in-itself

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A subset A of a topological space is said to be *dense-in-itself* if A contains no isolated points.

Note that if the subset A is also a closed set, then A will be a perfect set. Conversely, every perfect set is dense-in-itself.

A simple example of a set which is dense-in-itself but not closed (and hence not a perfect set) is the subset of irrational numbers. This set is dense-in-itself because every neighborhood of an irrational number x contains at least one other irrational number $y \neq x$. On the other hand, this set of irrationals is not closed because every rational number lies in its closure.

For similar reasons, the set of rational numbers is also dense-in-itself but not closed.