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HOMEOMORPHISMS OF TWO-POINT SETS

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Given a cardinal $\kappa \leq \mathfrak{c}$, a subset of the plane is said to be a κ -point set if and only if it meets every line in precisely κ many points.

In response to a question of Cobb, we show that for all $2 \leq \kappa, \lambda < \mathfrak{c}$ there exists a κ -point set which is homeomorphic to a λ -point set.

We also show that it is consistent with ZFC that for all $2 \leq \kappa < \mathfrak{c}$, there exists a κ -point set that is homeomorphic to a λ -point set for any $2 \leq \lambda < \mathfrak{c}$. On the other hand, we prove that it is consistent with ZFC that for all $2 \leq \kappa < \mathfrak{c}$ there exists a κ -point set that is not homeomorphic to a λ -point set for any distinct $2 < \lambda \leq \mathfrak{c}$.

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