It is a common knowledge that there is no continuous injective mapping from $R^2$ to $R$. Not even a separately continuous mapping, see e.g. [2, IV.9.]. This is an important property of continuity, which allows us to ”distinguish dimensions” in topology. When dealing with some generalized notion of continuity, it is natural to ask if it retains this property. We will show that this is not the case of quasi-continuity; i.e. we will prove that there is a quasi-continuous bijection from $R^2$ to $R$, with the quasi-continuous inverse mapping.

References