closed point

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Let X be a topological space and suppose that $x \in X$. If $\{x\} = \overline{\{x\}}$ then we say that x is a *closed point*. In other words, x is closed if $\{x\}$ is a closed set.

For example, the real line $\mathbb{R}$ equipped with the usual metric topology, every point is a closed point.

More generally, if a topological space is `http://planetmath.org/T1`T_1, then every point in it is closed. If we remove the condition of being T_1, then the property fails, as in the case of the Sierpinski space $X = \{x, y\}$, whose open sets are $\varnothing$, X, and $\{x\}$. The closure of $\{x\}$ is X, not $\{x\}$.