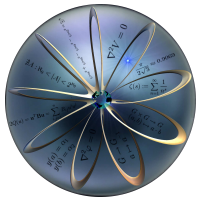

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locally compact

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A topological space X is *locally compact* at a point $x \in X$ if there exists a compact set K which contains a nonempty neighborhood U of x. The space X is *locally compact* if it is locally compact at every point $x \in X$.

Note that local compactness at x does not require that x have a neighborhood which is actually compact, since compact open sets are fairly rare and the more relaxed condition turns out to be more useful in practice. However, it is true that a space is locally compact at x if and only if x has a precompact neighborhood.