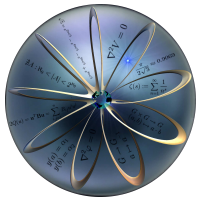

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sphere (metric space)

Canonical name	SpheremetricSpace
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The set $\{x \mid d(x,c) = r\}$ is called the *sphere* of radius r with centre c. This generalizes the notion of spheres to metric spaces.

Note that the sphere in a metric space need not look like a sphere in Euclidean space. For instance, if we impose the metric $d(x,y) = max\{|x_1 - y_1|, |x_2 - y_2|, |x_3 - y_3|\}$ on $\mathbb{R}^3$ instead of the Euclidean metric, spheres according to this metric are actually cubes! Even more bizarre situations can occur in general — a sphere might be disconnected, or it may be discrete, or it may even be an empty set.