Sphere Encyclopedia Article

Sphere by Michael Crichton

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Sphere

A sphere is a three dimensional figure that is the set of all points equidistant from a fixed point, called the center. The **diameter** of a sphere is a line segment which passes through the center and whose endpoints lie on the sphere. The radius of a sphere is a line segment whose one endpoint lies on the sphere and whose other endpoint is the center.

A great **circle** of a sphere is the intersection of a plane that contains the center of the sphere with the sphere. Its diameter is called an axis and the endpoint of the axes are called poles. (Think of the north and south poles on a globe of the earth.) A meridian of a sphere is any part of a great circle.

A sphere of radius r has a surface **area** of $4r^2$ and a **volume** of 4/3 r^3.

A sphere is determined by any four points in **space** that do not lie in the same plane. Thus there is a unique sphere that can be circumscribed around a tetrahedron. The equation in Cartesian coordinates x, y, and z of a sphere with center at (a, b, c) and radius r is $(x-a)^2 + (y-b)^2 + (z-c)^2 = r^2$.