

Circumference and spherical surface

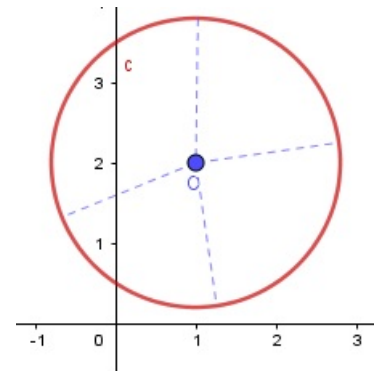
Circumference

A circumference is a two-dimensional shape made by drawing a curve that is the same distance all around from the center.

The circumference centered in $C = (c_1, c_2)$ with radius r is the set of points $P = (x, y)$ (the locus) that are distant from C the measure r , that is,

$$\|\overrightarrow{CP}\| = r \Leftrightarrow (x - c_1)^2 + (y - c_2)^2 = r^2.$$

The distance between the midpoint and the circumference is called the radius.



Example: Let us consider, on the Cartesian plane, the circumference that contains points $A = (-1, 4)$ and $B(3, 1)$ and whose diameter measures $\overline{AB} = 5$. Then the midpoint of $[AB]$, $M = (1, \frac{5}{2})$, corresponds to the center of the circumference and the radius is equal to $\frac{\overline{AB}}{2} = \frac{5}{2}$. Thus, the cartesian equation for this circumference is as follows:

$$(x - 1)^2 + (y - \frac{5}{2})^2 = \frac{25}{4}$$

Spherical surface

A Spherical surface is a three-dimensional shape where any of its points is at the same distance from a fixed point, called the center of the spherical surface.

The Spherical surface centered in $C = (c_1, c_2, c_3)$ with radius r is the set of points $P = (x, y, z)$ (the locus) that are distant from C the measure r , that is,

$$\|\overrightarrow{CP}\| = r \Leftrightarrow (x - c_1)^2 + (y - c_2)^2 + (z - c_3)^2 = r^2.$$

