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diametral points

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Defines	diametral
Defines	diametral circle

Two points P_1 and P_2 on the circumference of a circle (or on a sphere) are *diametral*, if the line segment P_1P_2 connecting them passes through the centre of the circle (resp. the sphere), i.e. is a <http://planetmath.org/Diameterdiameter>. Equivalently, the shortest distance of the diametral points P_1 and P_2 on the circle is maximal on the circle (resp. on the sphere), namely a half of the <http://planetmath.org/Perimeterperimetre>.

It's easily justified that a point of a circle (resp. a sphere) has exactly one diametral point.

A circle c is a *diametral circle* of a given circle c_0 , if c intersects c_0 *diametrically*, i.e. in two diametral points of c_0 .

If the equation of c_0 is $(x - x_0)^2 + (y - y_0)^2 = r^2$ and (a, b) is inside c_0 , then the equation of the diametral circle c with centre (a, b) is given by

$$(x - a)^2 + (y - b)^2 = r^2 - (x_0 - a)^2 - (y_0 - b)^2.$$