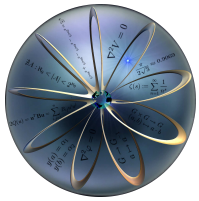

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chordal

Canonical name	Chordal
Date of creation	2013-03-22 15:07:50
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Entry type	Result
Classification	msc 51M99
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Synonym	radical axis

By the entry, the power of the point $(a,\, b)$ with respect to the circle

$$K_1(x,\, y) := (x - x_1)^2 + (y - y_1)^2 - r_1^2 = 0$$

is equal to $K_1(a,\, b)$ and with respect to the circle

$$K_2(x,\, y) := (x - x_2)^2 + (y - y_2)^2 - r_2^2 = 0$$

equal to $K_2(a,\, b)$. Thus the locus of all points $(x,\, y)$ having the same with respect to both circles is characterized by the equation

$$K_1(x,\, y) = K_2(x,\, y).$$

This reduces to the form

$$2(x_2 - x_2)x + 2(y_2 - y_1)y + k = 0,$$

and hence the locus is a straight line perpendicular to the of the circles. This locus is called the *chordal* or the *radical axis* of the circles.