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Yff Conics

Suppose that a, b, c are algebraic indeterminates and $U = u : v : w$ is a point given in homogeneous trilinear coordinates. The Yff conic of U is defined as the locus of a point $X = x : y : z$ satisfying the equation $f(x, y, z) = f(u, v, w)$, where $f(u, v, w) = (vw + wu + uv)/(u^2 + v^2 + w^2)$. The symbolic substitution $(a, b, c) \rightarrow (bc, ca, ab)$ maps the Yff conic of the symmedian point to that of the centroid. This mapping and others are used to find a large number of special points on many Yff conics.

Keywords: Ellipse, hyperbola, parabola, symbolic substitution, triangle center, trilinear coordinates, trilinear product, Yff conic.

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