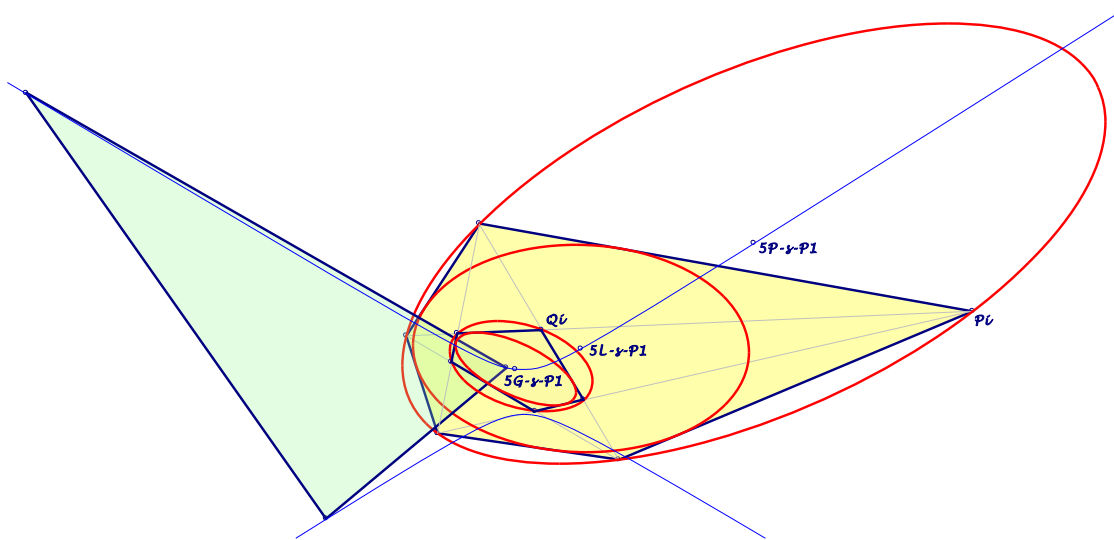


Background for these notes is:
 Chris van Tienhoven:
 Encyclopedia of Quadri-Figures and Poly Geometry
<http://www.chrisvantienhoven.nl/>

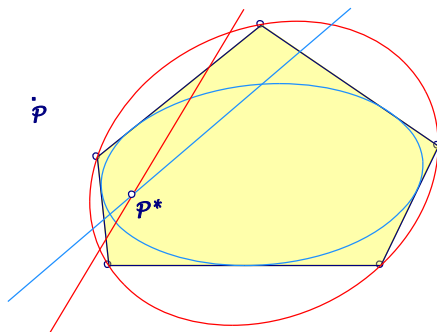
Isoconjugation for a Pentagon

Polarity wrt the inscribed and circumscribed conics of a pentagon lead to an isoconjugation wrt a corresponding reference triangle. The image conic of the line at infinity bears $5P$ -s- $P1$, $5L$ -s- $P1$ and $5G$ -s- $P1$.



The isoconjugation

We start with a pentagon $P_1P_2P_3P_4P_5$ and its circumscribed conic $5P$ -s- $Co1$ and its inscribed conic $5L$ -s- $Co1$ and consider for a point P the intersection P^* of its polars wrt $5L$ -s- $Co1$ and $5P$ -s- $Co1$. The transformation Tf with $P \rightarrow P^*$ shall be researched.



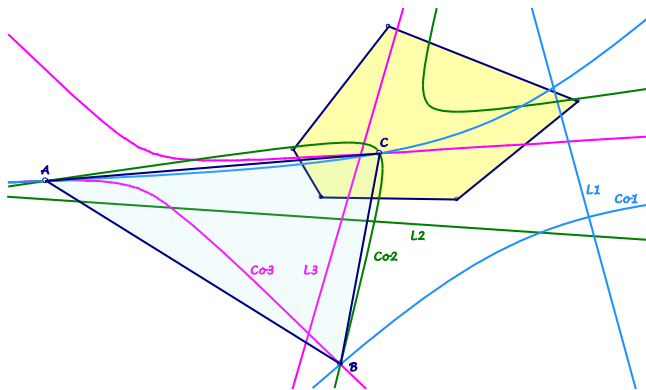
Special Tf -partners are $5L$ -s- $Co1$ contact points P on $P_i.P_{i+1}$ and its 4th harmonic point P^* .

- Polars of points at infinity wrt $5P$ -s-Co1 intersect in $5P$ -s-PI.
Polars of points at infinity wrt $5L$ -s-Co1 intersect in $5L$ -s-PI.
- The transformation Tf maps the line at infinity to a conic Co through $5P$ -s-PI, $5L$ -s-PI and $5G$ -s-PI.

The reference triangle

Now we consider a related pentagon $Q_1Q_2Q_3Q_4Q_5$ with $Q_i = P_i.P_{i+2} \cap P_{i+1}.P_{i+3}$ with its inscribed and circumscribed conics.

- Polars of points at infinity wrt the inscribed conic of $Q_1Q_2Q_3Q_4Q_5$ intersect in $5G$ -s-PI.
- The transformation Tf maps lines L to conics $Co(L)$ with three common points A, B, C .



- The four polars of A wrt the inscribed and circumscribed conics of $P_1P_2P_3P_4P_5$ and $Q_1Q_2Q_3Q_4Q_5$ coincide in BC (analog for B, C).
- The transformation Tf is an isoconjugation with reference triangle ABC .
- The conic Co through $5P$ -s-PI, $5L$ -s-PI and $5G$ -s-PI is a circumconic of ABC .

Eckart Schmidt
<http://eckartschmidt.de>
eckart_schmidt@t-online.de