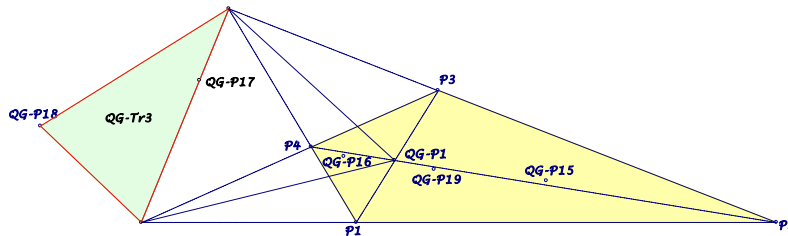


Background for these notes is:

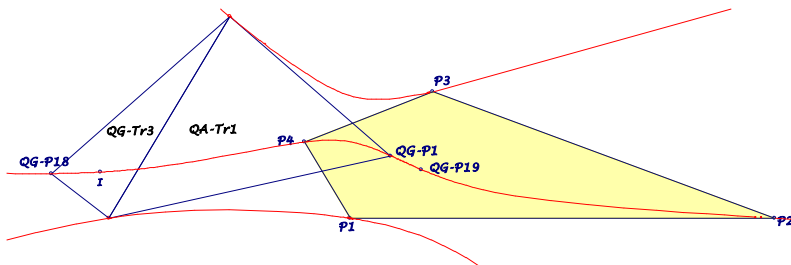
Chris van Tienhoven: Encyclopedia of Quadri-Figures  
<http://chrisvantienhoven.nl/>

### Pivotal Isogonal Isocubics wrt QG-Tr3

The Quasi Isogonal Triangle  $QG-Tr3$  has two vertices in the intersection points of opposite sides of the quadrigon, and the third point  $QG-P18$  is the  $QL-Tf1$  image of the pedal point  $QG-P17$  of  $QG-P1$  on  $QG-L1$ . The isogonal conjugation wrt  $QG-Tr3$  is the transformation  $QG$ -Quasi Isogonal Conjugate  $QG-Tf2$ . Isogonal conjugated are the opposite vertices of the quadrigon as well as  $QG-P1$ ,  $QG-P19$  and  $QG-P15$ ,  $QG-P16$ .



**Pivotal isogonal cubic wrt  $QG-Tr3$  and pivot  $QG-P1$**



Properties:

- This isocubic can also be considered wrt the  $QA$ -Diagonal Triangle  $QA-Tr1$  and the transformation  $QA-Tf2$  with pivot  $QG-P18$ .
- This isocubic is a circumcubic of the quadrigon, the  $QA$ -Diagonal Triangle and the triangle  $QG-Tr3$ .
- This isocubic contains the point  $QG-P19$  as common points of the tangents in the vertices of  $QG-Tr3$  and the pivot  $QG-P1$ .
- Evident: The vertices of the Ceva triangle of the pivot  $QG-P19$  wrt  $QG-Tr3$  lie on this isocubic.
- Evident: The in- and excenters of  $QG-Tr3$  lie on the cubic.

• The equation of the cubic:

$$S_A(q^2a^2 + p^2b^2)(r^2y^2 - q^2z^2)x + 2q^2S_AS_C(r^2x^2 - p^2z^2)y + S_C(r^2b^2 + q^2c^2)(q^2x^2 - p^2y^2)z = 0$$

Further pivotal isogonal cubics wrt  $QG-Tr3$  can be considered for the pivots  $QG-P15$ ,  $QG-P16$ ,  $QG-P19$ , but they aren't circumscribed cubics of the quadrigon. Taking for pivot points at infinity there will be circular cubics, but no example with significant relations can be mentioned.

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