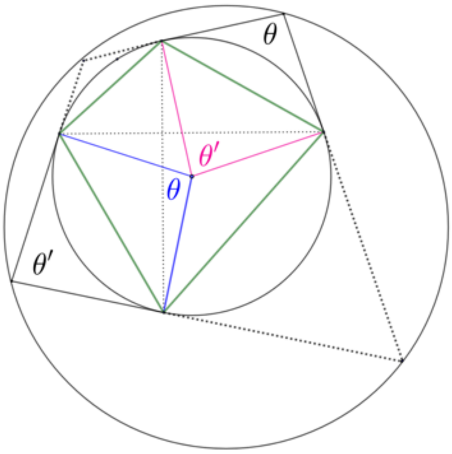
4.3.3 A *CO* inside a *CT*

Consider the green quadrilateral, contained by the inner circle, which is by definition therefore a *C*. Being tangent to the inner and cyclic to the outer circle, the black quadrilateral is a *CT*. Does that have any consequences for the *C*? yes, it does.



Because the black quadrilateral is cyclic, we can mark θ and its supplement, θ'. Because it is also tangential, we know the radii meet the tangents at right angles. That gives the cyclic quadrilateral at the top and the one at the bottom, so we can mark θ and θ'. But these are supplementary, therefore by the *converse* of our *CO* theorem, our *C* is a *CO*.

State in words the theorem which follows from this.

It is interesting to nest such figures. Here we have added one more circle. The green and lilac quadrilaterals are isosceles trapezia. Note that the blue one has to be a tangent kite. The different quadrilateral types from our 8-fold classification are marked.