

Problem 9

The Lester Circle is orthogonal to the Brocard Circle of the Second Brocard Triangle of the Fourth Brocard Triangle

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At the present time, there are seven notable circles known to be orthogonal to the Lester circle. See [1]. The below problem introduces a new notable circle which is orthogonal to the Lester circle.

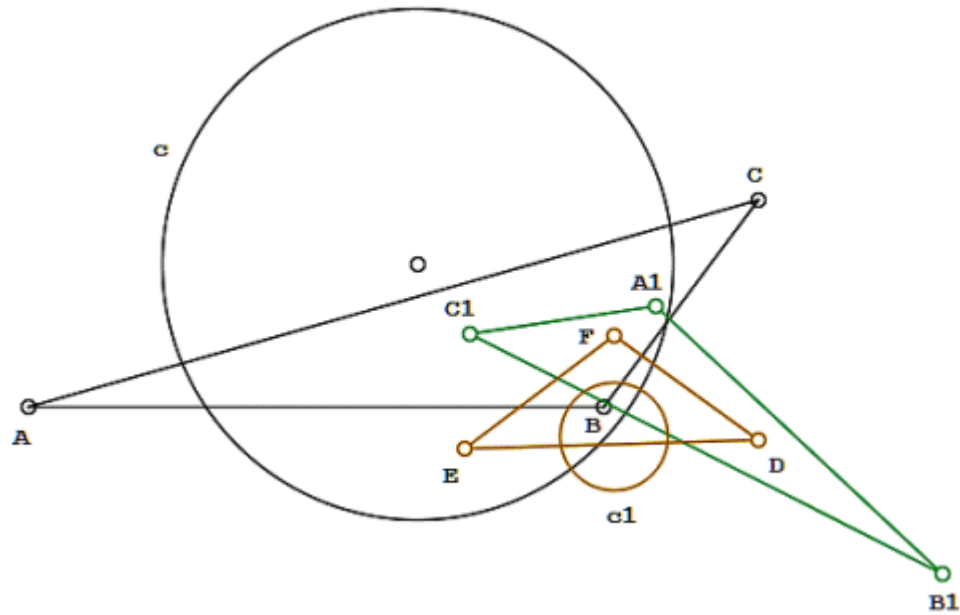
Prove the following problem, produced by the computer program “Discoverer”:

**Problem 9.** Prove that the Lester Circle is orthogonal to the Brocard Circle of the Second Brocard Triangle of the Fourth Brocard Triangle.

The reader may find the definitions in [2-5].

Please submit the solution of the problem for publication in this journal to the editor of this journal: [ddekov@ddekov.eu](mailto:ddekov@ddekov.eu)

See the figure:



In the figure:

$c$  – Lester circle,

$A_1B_1C_1$  - Fourth Brocard Triangle,

DEF - Second Brocard Triangle of the Fourth Brocard Triangle,

$c_1$  – Brocard Circle of Triangle DEF,

Circle  $c_1$  is orthogonal to the Lester circle.

### References

1. Dekov, D., Computer-Generated Mathematics: Seven Circles orthogonal to the Lester Circle, Didactical Modeling, 2008, [http://www.math.bas.bg/omi/DidMod/Articles/D%5B1%5D.Dekov\\_Lester\\_Circle.pdf](http://www.math.bas.bg/omi/DidMod/Articles/D%5B1%5D.Dekov_Lester_Circle.pdf)
2. Sava Grozdev and Deko Dekov, Computer-Generated Encyclopedia of Euclidean Geometry, 2014, available at the Web: <http://www.ddekov.eu/e2/>
3. Eric W. Weisstein, MathWorld - A Wolfram Web Resource, <http://mathworld.wolfram.com/>
4. Quim Castellsaguer, The Triangles Web, <http://www.xtec.es/~qcastell/ttw/ttweng/portada.html>
5. P. Yiu, The Circles of Lester, Evans, Parry, and Their Generalizations, Forum Geometricorum, 10 175–209.

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