

### Problem 32

The Feuerbach Point is the Homothetic Center of the Outer Yff Triangle and the Triangle of the Orthocenters of the Anticevian Corner Triangles of the Symmedian Point

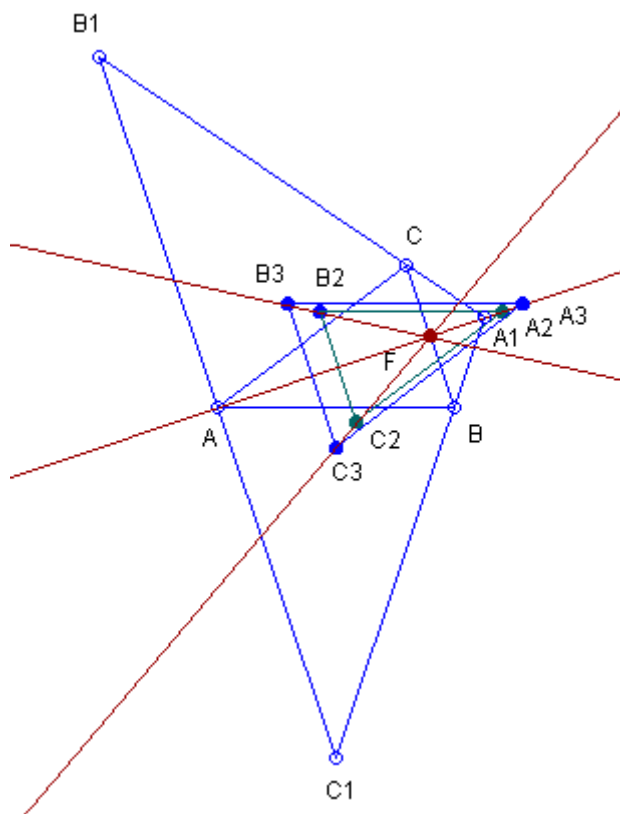
Publication Date: February 25, 2008

Prove the following computer-generated theorem:

**THEOREM.** The Feuerbach Point is the Homothetic Center of the Outer Yff Triangle and the Triangle of the Orthocenters of the Anticevian Corner Triangles of the Symmedian Point.

The reader may find the definitions in [1-4].

See the Figure:



$A_1B_1C_1$  - Tangential Triangle = Anticevian Triangle of the Symmedian Point;  
 $A_2B_2C_2$  - Outer Yff Triangle;  
 $A_3$  - Orthocenter of triangle  $A_1BC$ ;  
 $B_3$  - Orthocenter of triangle  $B_1CA$ ;  
 $C_3$  - Orthocenter of triangle  $C_1AB$ ;  
 $A_3B_3C_3$  - Triangle of the Orthocenters of the Anticevian Corner Triangles of the Symmedian Point;  
The Feuerbach Point  $F$  is the Homothetic Center of the Outer Yff Triangle and the Triangle of the Orthocenters of the Anticevian Corner Triangles of the Symmedian Point.

## References

1. Quim Castellsaguer, The Triangles Web,  
<http://www.xtec.es/~qcastell/ttw/ttweng/portada.html>
2. D. Dekov, Computer-Generated Encyclopedia of Euclidean Geometry, First Edition, 2006, available at the Web: <http://www.dekovsoft.com/e1/>.
3. D. Dekov, papers in this journal, 2006, 2007, 2008.
4. Eric W. Weisstein, MathWorld - A Wolfram Web Resource.  
<http://mathworld.wolfram.com/>