

Apollonian-Soddy Triangle

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Abstract

I proposed some problems on Soddy circle configuration

Let ABC be a triangle with the intouch triangle $A'B'C'$. Construct three circles (A) , (B) , (C) with centers A , B , C and tangent to each other. The Inner Soddy circles of (A) , (B) , (C) tangent to (A) , (B) , (C) at A'' , B'' , C'' respectively. Let A_1 , B_1 , C_1 are the centers of $(A'B''C'')$, $(B'C''A'')$, $(C'A''B'')$. Here name $A_1B_1C_1$ is the Apollonian-Soddy triangle of ABC . Define $A_{k+1}B_{k+1}C_{k+1}$ is the Apollonian-Soddy triangle of $A_kB_kC_k$.

Problem 1. Two triangle ABC and $A_kB_kC_k$ are perspective for any $k = 1, 2, \dots, n$.

Problem 2. The triangle ABC perspective to the intouch triangle of $A_kB_kC_k$ for any $k = 1, 2, \dots, n$.

Problem 3. Two triangle $A_kB_kC_k$ and $A_jB_jC_j$ are perspective for any $j \neq k; j, k = 1, 2, \dots, n$

Problem 4. The triangle $A_kB_kC_k$ perspective to the intouch triangle of $A_jB_jC_j$ for any $j \neq k; j, k = 1, 2, \dots, n$

Remarks: The intouch triangle of $A_kB_kC_k$ is the Soddy triangle of $A_{k-1}B_{k-1}C_{k-1}$

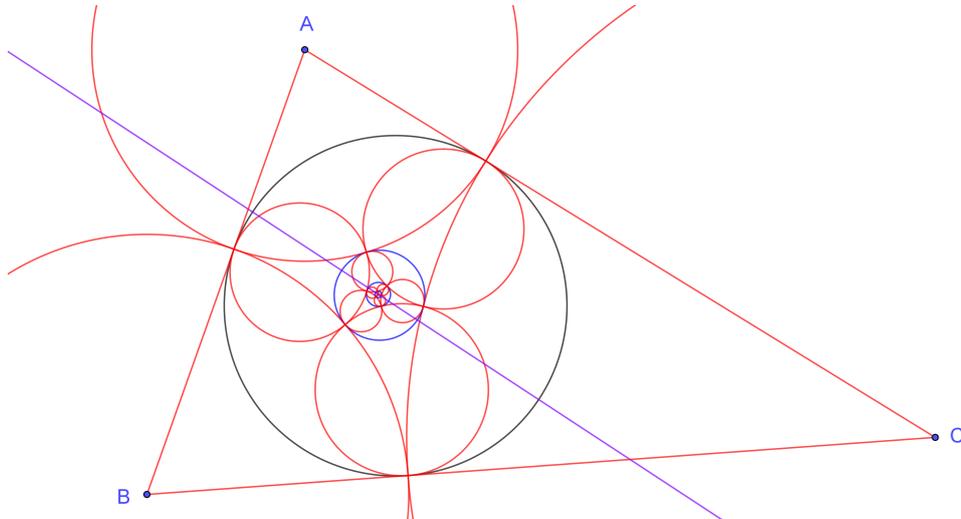


Figure 1

References

- [1] Apollonian gasket, https://en.wikipedia.org/wiki/Apollonian_gasket
- [2] Soddy Triangles, <http://mathworld.wolfram.com/SoddyTriangles.html>

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