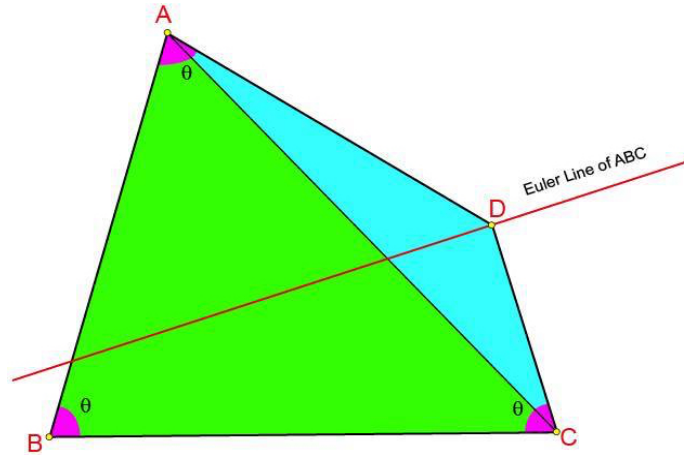


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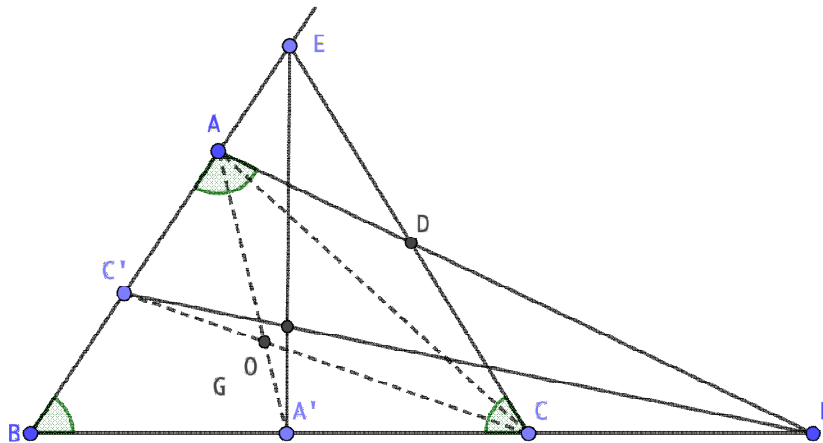
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ABCD quadrilateral, $\angle A = \angle B = \angle C$. Prove: D lies on Euler line of ABC

Proposed by Kadir Altintas-Afyonkarashisar-Turkey

Solution by Marian Ursărescu-Romania



Let A' = midpoint of BC , and C' midpoint of AB , $\triangle BEC$ ($\widehat{B} = \widehat{C}$) isosceles $\Rightarrow EA'$ is

mediator of BC , $\triangle ABF$ ($\widehat{A} = \widehat{B}$) isosceles $\Rightarrow FC'$ is mediator of AB

$\Rightarrow EA' \cap FC' = \{O\}$, O = is circumcenter of $\triangle ABC$ (1)

$AA' \cap CC' = \{G\} \Rightarrow G$ is centroid of $\triangle ABC$ (2)

Now, applying Pappus theorem from triplets: E, A, C' and F, C, A' \Rightarrow the points:

D, O, G are collinear $\Rightarrow D$ lies on Euler's line of ABC .