

DEDUCTIBILITY AND ANALOGY IN THE STUDY OF TRIANGLES (IV) - THE H-CEVIAN TRIANGLE AND THE H- CIRCUMCEVIAN TRIANGLE –

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Abstract. As in the first three papers with the same generic title, in this paper we propose, using logical deductibility relations and the method of analogy, to present some interesting results in Triangle Geometry. Thus, we consider a triangle ABC and the altitudes of the triangle, which intersect at the point H , called the orthocenter of the triangle and which intersect the sides of the given triangle at the points A' , B' and C' , and the circumscribed circle of the triangle ABC at the points A_1 , B_1 and C_1 . Then, we will call the triangle $A'B'C'$ the H-cevian triangle attached to the triangle ABC and the point H , and the triangle $A_1B_1C_1$ we will call the H-circumcevian triangle attached to the triangle ABC and the point H . Using usual mathematical knowledge, valid in any triangle, but also the results presented in the first work mentioned above, we can obtain a series of very interesting geometric or trigonometric identities and inequalities, some of them very difficult to prove, synthetically. On the other hand, these new geometric or trigonometric relations introduced in certain derivable or only integrable functions, can involve a series of differential or integral identities or inequalities, particularly interesting. The work is, exclusively, of the Didactics of Mathematics and is addressed, equally, to pupils, students and teachers eager for performance, in this field of Mathematics or, in Mathematics, in general.

Keywords: deductibility, analogy, triangle, cevian, circumcevian, circle, altitude, geometric / trigonometric, identity, inequality