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Title

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Abstract. By using the computer program "Discoverer", we give theorems about anticevian corner products.

Keywords. anticevian corner product, triangle geometry, remarkable point, computer-discovered mathematics, Euclidean geometry, Discoverer.

Mathematics Subject Classification (2010). 51-04, 68T01, 68T99.

1. Introduction

$\mathcal{ABC}$ $\mathscr{ABC}$ $\mathbb{ABC}$ $\mathtt{ABC}$ ABC $\mathfrak{ABC}$ $\overrightarrow{PQ}$

2. Preliminaries

2.1. Barycentric Coordinates.

Definition 2.1. *Definition.*

Example 2.1. *Example.*

Lemma 2.1. *Lemma.*

Theorem 2.1. *Theorem.*

Proof. The proof. □

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Corollary 2.1. *Corollary.*

Remark. *Remark.*

Theorem 2.2 (Pythagorean theorem)**.** *Theorem.*

Theorem 2.3 (Gibert's theorem)**.** *Theorem.*

$$|PQ|^2 = -a^2vw - b^2wu - c^2uv \tag{1}$$

where $u = u_1 - u_2, v = v_1 - v_2$ and $w = w_1 - w_2$.

$$|PQ|^2 = -a^2vw - b^2wu - c^2uv$$

where $u = u_1 - u_2, v = v_1 - v_2$ and $w = w_1 - w_2$.

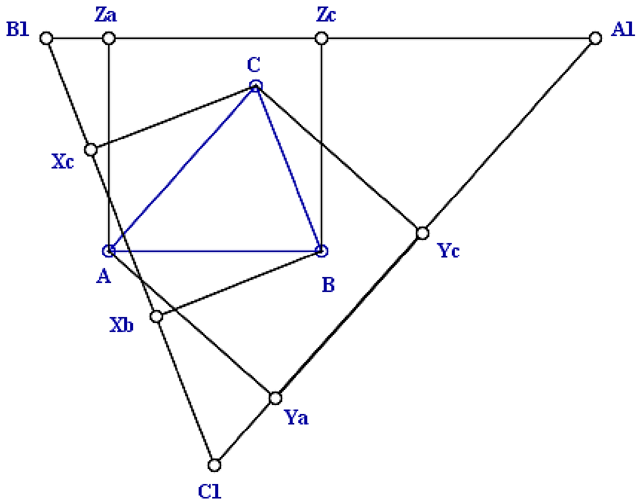

FIGURE 1. PNG figure

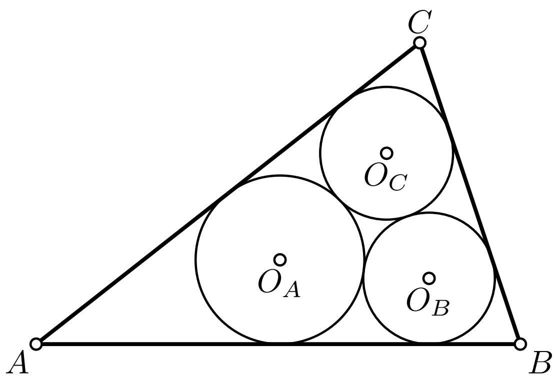

FIGURE 2. EPS figure

Determinant:

$$\begin{vmatrix} u_1 & v_1 & w_1 \\ u_2 & v_2 & w_2 \\ x & y & z \end{vmatrix} = 0. \tag{2}$$

Matrix:

$$A = \begin{bmatrix} u_1 & v_1 & w_1 \\ u_2 & v_2 & w_2 \\ x & y & z \end{bmatrix} \tag{3}$$

$$B = \begin{pmatrix} u_1 & v_1 & w_1 \\ u_2 & v_2 & w_2 \\ x & y & z \end{pmatrix} \tag{4}$$

$$\frac{a}{x} + \frac{b}{y} + \frac{c}{z\sqrt{2}} = 0.$$

REFERENCES

[1] Quim Castellsaguer, The Triangles Web, http://www.xtec.cat/~qcastell/ttw/ttweng/portada.html.

[2] P. Douillet, *Translation of the Kimberling's Glossary into barycentrics*, 2012, v48, http://www.douillet.info/~douillet/triangle/glossary/glossary.pdf or http://www.ddekov.eu/e2/htm/links/Douillet.pdf.

[3] B. Gibert, Cubics in the Triangle Plane, http://bernard.gibert.pagesperso-orange.fr/index.html.

[4] S. Grozdev and D. Dekov, *A Survey of Mathematics Discovered by Computers*, International Journal of Computer Discovered Mathematics, 2015, vol.0, no.0, 3-20. http://www.journal-1.eu/2015/01/Grozdev-Dekov-A-Survey-pp.3-20.pdf.

[5] S. Grozdev and D. Dekov, *Computer-generated mathematics: Points on the Kiepert hyperbola*, The Mathmatical Gazette, vol. 98, 2014, no. 543, 509-511, http://www.ddekov.eu/papers/Grozdev,Dekov%20Math%20Gazette,%20Nov.%202014,%20note%2098-33.pdf.

[6] S. Grozdev and D. Dekov, *The Computer improves the Steiner's Construction of the Malfatti Circles*, Mathematics and Informatics, 2015, vol. 58, no.1, 40-51. http://www.azbuki.bg/editions/azbuki/archive/archive2011/doc_download/2240-grozdev-dekov012015.

[7] S. Grozdev and V. Nenkov, *Three Remarkable Points on the Medians of a Triangle* (Bulgarian), Sofia, Archimedes, 2012.

[8] S. Grozdev and V. Nenkov, *On the Orthocenter in the Plane and in the Space* (Bulgarian), Sofia, Archimedes, 2012.

[9] C. Kimberling, *Encyclopedia of Triangle Centers - ETC*, http://faculty.evansville.edu/ck6/encyclopedia/ETC.html.

[10] Gerry Leversha, *The Geometry of the Triangle*, The United Kingdom Mathematical Trust, The Pathways Series no.2, 2013.

[11] J. Tabov and B. Lazarov, *Geometric Constructions*, Sofia, Narodna Prosveta, 1990.

[12] G. Paskalev and I. Tchobanov, *Remarkable Points in the Triangle* (in Bulgarian), Sofa, Narodna Prosveta, 1985.

[13] G. Paskalev, *With coordinates in Geometry* (in Bulgarian), Sofia, Modul-96, 2000.

[14] E. Weisstein, *MathWorld - A Wolfram Web Resource*, http://mathworld.wolfram.com/.

[15] *Wikipedia*, https://en.wikipedia.org/wiki/.

[16] P. Yiu, *Introduction to the Geometry of the Triangle*, 2001, new version of 2013, http://math.fau.edu/Yiu/YIUIntroductionToTriangleGeometry130411.pdf.

[17] Paul Yiu, *Collinearity of the reflections of the intercepts of a line in the angle bisectors of a triangle*, International Journal of Computer Discovered Mathematics, 2015, vol.0, no.0, 27-31. http://www.journal-1.eu/2015/01/Paul-Yiu-Reflections-of-Intercepts-pp.27-31.pdf.