AN EXAMPLE OF TERNARY GROUP DEFINED ON THE POINTS OF AN ELLIPSE

ABSTRACT. Let $\mathscr{E}$ be the points set of an ellipse and $\circ: \mathscr{E}^3 \to \mathscr{E}$ a ternary operation defined as follows:

- If $M_1 \neq M_2 \neq M_3$, then $(M_1, M_2, M_3)_\circ$ is the point in which the parallel of $M_1 M_3$ (or of the tangent to $\mathscr{E}$ in M_1 if $M_1 = M_3$) through M_2 intersects again the ellipse (Fig.1a respectively Fig.1c);

- If the tangent to $\mathscr{E}$ in M_2 is parallel to $M_1 M_3$, then $(M_1, M_2, M_3)_\circ = M_2$ (Fig.1b);

- If $M_1 = M_2$ then $(M_1, M_1, M_3)_\circ = (M_3, M_1, M_1)_\circ = M_3$ (also for $M_3 = M_1$).

$(\mathscr{E}, \circ)$ is an semicommutative ternary group isomorphic to the 3-group $(U, *)$ where $U = \{z \in \mathbb{C}; |z| = 1\}$ and $*: U^3 \to U; (z_1, z_2, z_3)_* = \dfrac{z_1 z_3}{z_2}$.

Universitatea din Baia Mare
str.Victoriei nr.76, 4800-Baia Mare
ROMÂNIA