

A short introduction to GeoGebra automated reasoning tools (ART)

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Abstract:

This communication attempts to introduce, describe and exemplify the technical features of some recently implemented Automated Reasoning Tools in the dynamic mathematics software GeoGebra. As well as to discuss on the benefits and concerns arising from the use of these automated tools in the mathematical teaching and learning process.

Automated Reasoning Tools (ART) currently include several commands: The **Relation** command, that can be used for the automatic finding of geometric conjectures and the verification or denial of these conjectures; the **LocusEquation** command, which calculates the implicit equation of a free point such that a given property holds; the **Prove** and **ProveDetails** commands, which decide if a statement is true in general and, eventually, give some additional conditions for its truth, avoiding degenerate cases. A complete tutorial can be found in Kovács, Recio, and Vélez (2017).

It is our aim that the use GGb-ART in the classroom help students to do mathematics better or faster, in a more creative way by exploring, discovery and conjecturing, which fosters their curiosity and critical spirit, as well as gives them a way of reasoning focused on competencies for the digital age.

While the classroom use of ART is still very much in an incipient and experimental phase, one should bear in mind that these tools are now readily available to the more than 100 million GeoGebra users worldwide. Hohenwarter, Kovács and Recio (2019) note that, “*as with pocket calculators, people will probably start using ART for checking geometric facts without the consensus of the pedagogical community on its role.*”

References:

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