Using CAS in the classroom: personal thoughts (Part II)

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In this presentation, we will continue our reflection started at ACA2021 about the use of computer algebra in the classroom. Trying to find examples of how CAS technology can be easily used to teach subjects where only pencil and paper techniques would discourage the user. Examples that should appear in textbooks but, unfortunately, not so often. At the last ACA conference (virtual ACA2021), we focused on how computer algebra could help to understand how third degree polynomial roots should be simplified. We wrote that future ACA conferences could cover more examples: trying to update some integration tables in relation with the Rubi system and trying to use computer algebra to teach some parts of complex analysis.

This year, we chose complex analysis because it doesn't seem to fit with computer algebra. But many concepts in analysis can be introduced and/or illustrated by CAS. We will look at some examples:

- how the user can visualize the complex roots of a polynomial using 2D and 3D plots;

- how Laurent series, residue integration techniques and numerical line integrals can be combined to verify some answers;

- how to use a built-in Rieman Zeta function to observe some non trivial zeros of $\zeta(s)$.

Nspire CX CAS and Maple software will be used.