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Preliminary title :

Jacob de Gelder and his teaching of cubic equations

Abstract :

31 maart 2017 om 14:30

Jacob de Gelder (1765-1848) was a self-made mathematician. He started a school around 1786. After the Napoleonic wars, he lost his school, but thanks to his friends, he became involved in mathematical and geodesic projects, for instance the triangulation project of the new Dutch kingdom. He became professor in mathematics at the military academy in 1814 and was appointed extraordinary professor of mathematics at Leiden University in 1819. Highlight of his career was his appointment as ordinary professor in 1824. He was to remain in duty until he retired at the age of 75 in 1840. It gave him the social status to promote his ideas about how to teach mathematics and how mathematics should be used. He wrote many books for his pupils and for a more general audience. One of them is "Beginselen der Stelkunst", a book on algebra, published in 1819. These books were written for study in the classroom, but also for students who did their studies at home alone, without a teacher, without other pupils, without a dialogue. So the dialogue between teacher and pupil became part of the book. One of the chapters of "Beginselen der Stelkunst" deals with cubic equations. It starts with the Cardano formula and then explains the calculation of the roots of any cubic equations. One particularity is the presence of square roots of negative numbers. The reader is hoping for a formula that presents three easy solutions, like there is one for quadratic equations. De Gelder treats the topic like he is standing next to his pupil, feeling sorry that such a formula does not exists. He explains that it is logical that there is none, encourages the reader to find out why. When he is done with this algebraic approach, he continuous with approximations.

This approach and style continued in textbooks until the first half of the twentieth century. In the 1970's, it was discarded by the New Math movement and did not return.

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