METADATA

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Abstract

This project attempts to approach the topic of analysis and synthesis from Greek Antiquity, the Arabic tradition, and the European Renaissance up to the 18th century. It consists of three major sections. The first section approaches the method of analysis and synthesis in the ancient Greek mathematical tradition, from Plato to Pappus, which, first of all, includes the considerations of Plato and Aristotle, by using original passages from their treatises. Then a series of mathematical propositions from treatises by Euclid, Archimedes, Apollonius, Heron, and Pappus is presented, case by case. Reference is made to theoretical issues of the method as they were posed and applied and, of course, as they influenced all posteriors in the Arab and Western European tradition. In the second section, we move on to analyzing and synthesizing the Arab mathematical tradition, from Ibrahim ibn-Sinan to Ibn al-Haytham, with the intermediate addition of Abu Sahl al-Kuhi. Their considerations, as well as their mathematical propositions, are presented. Finally, in the third section, we conclude with an analysis and synthesis of the European mathematical and, more broadly, scientific tradition from the Renaissance to the 18th century, from Viète to Leibniz. The third section includes, in addition to Viète and Leibniz, Galileo, Descartes, and Newton. The presentations include their theoretical approaches and case-by-case issues concerning mathematics, physics, and general methodology.

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