

Ortega, Juan De | Encyclopedia.com

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(b. Palencia, Spain, ca. 1480; d. ca. 1568), *mathematics*.

Ortega was a member of the Order of Preachers and was assigned to the province of Aragon. He taught arithmetic and geometry in Spain and Italy.

Ortega followed the classical tradition and drew inspiration, like his Spanish contemporaries, from the arithmetic of Boethius. His work reveals the influence of the more important mathematicians of the thirteenth and fourteenth centuries, but he was apparently unfamiliar with fifteenth-century works.

Ortega wrote *Cursus quattuor mathematicarum artium liberalium* (Paris, 1516) and *Tractado subtilisimo d'aritmética y de geometria* (Barcelona, 1512). The first part of the latter was devoted to commercial arithmetic and contains many examples, practical rules, and conversion tables for the various currencies then in use in the different regions of Spain. The second part gives instruction in practical rules of geometry "whereby anybody can measure any figure."

This work is of historical interest mainly for the numerical values that he obtained in extracting square roots, which appear in some of the geometric applications in the second part of the book. Almost identical editions were published in Seville in 1534, 1537, and 1542 (each published by Ortega himself), in which he modified the roots extracted in the first edition. He replaced them with values satisfying the Pell equation ($x^2 - Ay^2 = 1$); these values thereby gave the best approximation of square roots. Mathematicians have wondered how Ortega managed to evolve a method enabling him to find such closely approximate values, when a general solution of the Pell equation was presumably not achieved before Fermat (1601–1665).

Ortega's *Aritmética* became famous throughout Europe; the work was published in Lyons (1515), Rome (1515), Messina (1522), and Cambray (1612). It was also published in Seville (1552), probably posthumously, as it contained inadmissible changes. (This publication was later corrected.) The Lyons edition was the first book on commercial arithmetic to be published in French.

BIBLIOGRAPHY

Works that discuss Ortega and his work are Cantor, *Vorlesungen Über die Geschichte der Mathematik*, II (Leipzig, 1908), 388; J. E. Hofmann, *Geschichte der Mathematik*, trans. into Spanish as *Historia de la Matemática* ([Mexico City](#), 1960), I, 109–110; J. Rey Pastor, "Los matemáticos españoles del siglo XVI," in *Biblioteca scientia* no. 2 (1926), 67, and "Las aproximaciones de Fr. Juan de Ortega," in *Revista matemática hispanoamericana*, 7 (1925), 158.

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