Regiomontanus (1436-1476)

Johannes Müller von Königsberg

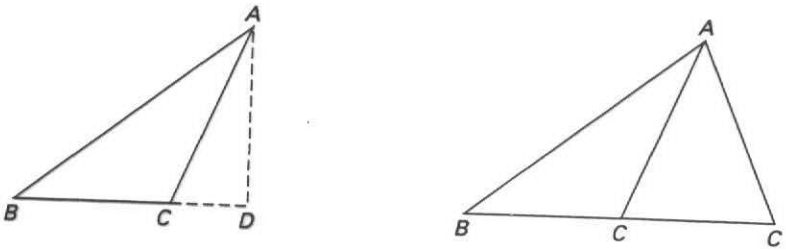

FIGURE 9.4 *On Triangles:* The ambigious case

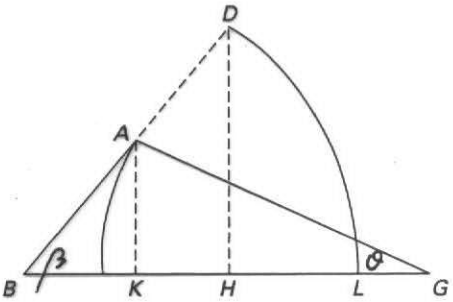

FIGURE 9.5 Proof of the law of sines

$$\frac{AB}{AG} = \frac{\sin(\theta)}{\sin(\beta)}$$

After graduating in 1457 (Vienna), he lectured on optics and was supported by Basilios Bessarion. In 1461, he moved to Rome with the Cardinal in 1461 as part of his household. In 1465 he built astrolabes for. Cardinal Bessarion. In 1467 Regiomontanus left Rome to work at the royal court of Hungary (Matthias Corvinus). In 1471 he moved to the free city of Nuremberg, where he built the first astronomical observatory in Germany In 1475 he went to Rome to work with Pope Sixtus IV, and died suddenly (reportedly by assasination) in 1476 at the age of forty.

He wrote *De Triangulis omnimodus* (1464) and *Epytoma in almagesti Ptolemei*.

De Triangulis (On Triangles) was one of the first textbooks presenting the current state of trigonometry and included lists of questions for review of individual chapters.

Cardano noted that much of the material on spherical trigonometry was plagiarised by Regiomontanus from the 12th-century work of the Islamic Jabir ibn Aflah.

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Con licenza de' Superiori (1560)

A rework of Cardano's Ars Magna

Rafael Bombèlli
(1526-1572)

$x^3 = 15x + 4$

Cardano's Formula gives solution

$x = \sqrt[3]{2+A} + \sqrt{2-A}$, $A^2 = -121$

Bombelli's technique "rests on sophistry rather than in truth"

write $\sqrt[3]{2+A}$ as $a+\sqrt{-b}$
$\sqrt[3]{2-A}$ as $a-\sqrt{-b}$

$a^2+b = \sqrt[3]{(2+A)(2-A)}$
$= \sqrt[3]{2+121} = 5$

$a^3 - 3ab = 2$
$a^2 + b = 5$

Bombelli noted an integer solution
$b=1$, $a=2$ $x = (2+i)+(2-i) = 4$
(There is a second solution $a = -1.866$
$b + 1.518$
solutions; -0.268, 4, -3.732