Omar Khayyam, A Surprising Mathematician

Born c. 1060AD, Died c. 1123 AD

Omar was what we now call a "Renaissance Man". Better known as a Poet, thanks to the translations of Edward Fitzgerald, and his poem the ***Rubaiyyat of Omar Khayyam***, he was also an astronomer, mathematician, statesman, general and scientist. The information I have that follows is from the book ***The Mathematics of Great Amateurs***, by Julian Lowell Coolidge, Dover Publications Inc., New York, 1963, first published by Oxford University Press in 1949.

Omar's interest in mathematics surrounds the solution to equations. He is concerned with the solutions in positive integers, so carries on with the work of Diophantus (see Thursday, June 4, 2009). A typical work that he might be working on is in the form of: $x^3 + cx^2 + a^3 = b^2x$. His great task is to make a systematic study of all linear, quadratic, and cubic equations that have at least one positive root.

Omar's fame as a mathematician rests on his claim to be the first to handle every type of cubic that has a positive root. He did this both through algebraic and geometric methods. He was recognized as the author of the most important treatise on algebra before modern times as reflected in his *Treatise on Demonstration of Problems of Algebra* giving a geometric method for solving cubic equations by intersecting a hyperbola with a circle.

I think, what I find interesting here is that over 900 years ago, mathematicians were involved with this type of equation. It is now, in Canada, a grade 11 and 12 topic. The actual solution to cubic equations, was really worked out by Tartaglia, the first to work out a general solution for equations of the third degree (1539 AD), and Cardano, who published in 1545 AD.