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1003-X1-288 **Stacy G. Langton*** (langton@sandiego.edu), Department of Math & Computer Science,
University of San Diego, 5998 Alcalá Park, San Diego, CA 92110. *Newton's proof that $a = v^2/r$.*

If a body moves in uniform circular motion about a circle of radius r with constant speed v , its centripetal acceleration is given by $a = v^2/r$. Isaac Newton gives this result in Proposition 4, Book I of the *Principia*. In the Scholium to that proposition, Newton gives an alternate proof, which actually goes back to notes he wrote around 1665. This proof has puzzled scholars, including the first publisher of the 1665 notes, because Newton appears to be adding the *magnitudes* of vectors which point in different directions, an operation which, to them, seemed to be meaningless. In this talk, I will show that we do such vector addition all the time, and that Newton's argument makes perfect sense. (Received September 07, 2004)