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J Lyn Miller* (Lyn.Miller@wku.edu). *Ideal Membership and "Automated" Theorem-Proving in Abstract Algebra.*

We'll explore the mechanisms of one type of "automated" theorem-proving that can be discussed in any upper-division course that has covered the definitions of rings and ideals: Given a typical conjecture from plane geometry, we convert its hypotheses and conclusions to polynomials. Then using Groebner bases (built-in to such software packages as Mathematica, Maple, and the like) and their accompanying ideal membership test (which we'll describe), we determine whether the conjecture holds by finding out whether the conclusion polynomial belongs to the ideal generated by the hypothesis polynomials. A sample from my sophomore/junior math majors will be shown. It's a great and accessible way to turn students on to the "applications" of computational abstract algebra! (Received September 15, 2000)