1116-12-561   **Chad Awtrey**, **Robin French**, **Peter L Jakes*** (`pjakes@elon.edu`) and **Alan Russell**. *Degree 6 Polynomials and Their Solvability by Radicals.*

For about 500 years, formulas have existed to find exact solutions to quadratic, cubic and quartic polynomials. However, it was proven later that not all solutions to quintic polynomials can be found exactly, or solved by radicals. As a result, a method was created in the 20th century using a property of each function called its Galois group in order to determine which degree five polynomials could be solved exactly and which could not. This project expands upon this discovery by exploring degree six polynomials. By using computer software, the Galois group of a degree six polynomial can be determined by only using two resolvent polynomials, improving upon prior methods. From this information, it can then be determined whether or not the polynomial is solvable by radicals. Further research can explore higher degree polynomials as well as reducible polynomials, as the current method is only viable for irreducible polynomials. (Received September 07, 2015)