A Novel Method to Factor Cubic Polynomials: The ad-Method
Amy Barnsley, Megan McCormick, Daniel Rowe, and Molly Smith, Northern Michigan University

Abstract
We introduce a novel method of factoring cubic polynomials over the integers (called the ad-method) that has structural similarities to the ac-method of factoring quadratics. Each method relies on solving equations over the integers, followed by factoring by grouping. In this article, we introduce the ad-method, give a proof, examine multiple examples, and then discuss the teaching and learning of this concept.

Amy Barnsley (abarnsle@nmu.edu) is an associate professor of mathematics at Northern Michigan University. She has worked in education for over 20 years, teaching at all levels from fifth grade to college level. Amy taught developmental mathematics at University of Alaska, Fairbanks, for 9 years and is in her fourth year at Northern Michigan University. She earned her PhD in mathematics education while studying the use of online homework with developmental mathematics. She is passionate about improving online mathematics education and mentoring future teachers.

Megan McCormick (memccorm@nmu.edu) is a senior at Northern Michigan University. She is currently majoring in Elementary Education with minors in mathematics and language arts, and she is expected to graduate in December of 2017. Megan works at NMU as a TA for the math department where she works with developmental mathematics classes. She is passionate about understanding math anxiety and hopes to study it in the future.
Daniel Rowe (darowe@nmu.edu) is an assistant professor of mathematics at Northern Michigan University. He grew up on a fishing resort in Northwestern Ontario, Canada. He earned a BMath at the University of Waterloo, and he went on to earn an MS and PhD in mathematics at the University of Toronto. He currently lives in Marquette Michigan.

Molly Smith (molsmith@nmu.edu) is a senior at Northern Michigan University, studying Elementary Special Education and Mathematics and expects to graduate in December of 2017. She has worked as a teacher’s assistant and tutor for a variety of math classes. Molly is passionate about arts integration in education.