

Meeting: 1003, Atlanta, Georgia, MAA CP II, MAA Session on Initializing and Sustaining Undergraduate Research Projects and Programs

1003-I1-605 **Richard N. Barshinger*** (rxb10@psu.edu), Penn State–Scranton, 120 Ridge View Drive, Dunmore, PA 18512, and **Joseph Dinoto, Uma Patel** and **Claudia Vitelli**. *Formulas by Induction for Multiple Averages of the Partial Sums of Alternating Series*.

Articles in the Monthly, CMJ, Math. Mag., sometimes suggest extensions suitable for undergraduate research. An old article by Pinsky, about using successive averages to accelerates convergence of an alternating series, is an example. Authors 2-4 were sophomore students in an independent study class. Along with the presenter, all developed closed formulas for those successive averages, Pascal's triangle playing a surprising role. The student Patel, and the presenter, provided independent complete induction proofs of the validity of the formulas; the other students were able to present partial proofs. This example was one of several projects worked on, for which the students received up to three academic credits. (Received September 24, 2004)