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Samer S. Habre* (shabre@lau.edu.lb). *Students' Challenges with Covariational Reasoning in the Polar Coordinate System.*

Covariational reasoning has been the focus of many studies but few looked into this reasoning in the Polar Coordinate System. Research on student's familiarity with polar coordinates and graphing in the Polar Coordinate System is scarce. This paper examines the covariational reasoning of students while plotting polar curves using the corresponding plot in the Cartesian plane. The study investigates not only the covariational reasoning associated with polar coordinates, but also explores how students synchronize the reasoning between the two coordinate systems. Results show that students' main challenge is associated with the negative radial distance. In addition, the study infers that the use of dynamical software for graphing purposes may have contributed to rather good results in mental actions related to covariational reasoning. (Received August 18, 2014)