1145-R1-2723   **Hunter R Johnson*** (`hujohnson@jjay.cuny.edu`), John Jay College, Mathematics & Computer Science Dept., 524 W 59th St, New York, NY 10019. *A Difference Oriented View of Leibniz's Early Ideas.*

We seek to deepen student understanding of the derivative by analyzing some of Leibniz's early ideas on differences. In particular we explore the use of the symbol d as a difference operator and $\int$ as cumulative sum on discrete lists of increasing abcissae. These operations map neatly onto the Numerical Python (numpy) operations of diff and cumsum. Using these tools we make sense of statements such as $d \int x = \int dx = x$. The aim is to achieve a deepened understanding of Leibniz notation, the derivative, and the historical evolution of Leibniz's ideas. (Received September 25, 2018)