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Marc Chamberland* (chamber1@grinnell.edu), Department of Mathematics and Statistics,
Gri, 1116 8th Ave., Grinnell, IA 50112. *Closed Forms for Infinite Series via Second Order
Difference Equations*. Preliminary report.

An important component of Apéry's proof that $\zeta(3)$ is irrational involves a second-order linear difference equation. This paper considers various binomial sums, shows they satisfy a second-order difference equation, and discovers associated infinite series. The process depends heavily on experimental mathematics; one encounters Zeilberger's techniques, integer relations methods, and Padé approximants, among other tools. (Received September 04, 2019)