1125-VN-2044 **Nicholas Heiner** (heiner@hendrix.edu) and **Duff Campbell*** (campbell@hendrix.edu).
Generalizing the convergent to a simple continued fraction.

If we write the simple continued fraction $a_0 + \dfrac{1}{a_1 + \frac{1}{a_2 + \cdots}}$ as $[a_0; a_1, a_2, \ldots]$, then the convergents are well-known as $\dfrac{h_n}{k_n}$, where $h_n = a_n h_{n-1} + h_{n-2}$ and $k_n = a_n k_{n-1} + k_{n-2}$ for $n \geq 0$; the four numbers $h_{-1} = 1$, $h_{-2} = 0$, $k_{-1} = 0$, $k_{-2} = 1$ set "initial conditions" so that the first two convergents are, appropriately, $\dfrac{h_0}{k_0} = a_0$ and $\dfrac{h_0}{k_0} = \dfrac{a_0 a_1 + 1}{a_1} = a_0 + \dfrac{1}{a_1}$. Nicholas Heiner made it his senior project to generalize these initial conditions, and thus $h_{-1} = b$, $h_{-2} = a$, $k_{-1} = d$, $k_{-2} = c$ are arbitrary. Several interesting theorems were discovered, as well as other conjectures which remain as yet unproven. (Received September 19, 2016)