1093-11-248 **Helen G. Grundman** and **Laura L. Hall-Seelig*** (hallseeligl@merrimack.edu).

Simultaneous Solutions to a Pair of Diophantine Equations.

Focusing on algebraic integers in fields of degree at most four over $\mathbb{Q}$, we consider the problem of finding all simultaneous solutions to the pair of equations

$$xyz = 1 \qquad \text{and} \qquad x + y + z = k$$

for various values of $k \in \mathbb{Z}$. Adapting the methods used by Andrew Bremner for the case where $k = 1$, we translate the problem to one of finding points on a related elliptic curve, E_k, and solve the problem completely for all k for which the Mordell-Weil group of E_k is finite. (Received August 16, 2013)