E 1554. *Proposed by Krishna Savati, Ann Arbor, Michigan*

Find all solutions of $f(x) = -f(1/x)$.

E 1555. *Proposed by Alfred Brauer and Aubrey Kempner, University of North Carolina and University of Colorado*

In his paper "On the integer solutions of the equation $x^2+y^2+z^2+2xyz=n$," *Journal of the London Math. Soc.*, 28 (1953) 500–10, L. J. Mordell states: "I do not know anything about the integer solutions of

$$x^3 + y^3 + z^3 = 3 \tag{1}$$

beyond the existence of the four solutions

$$(1, 1, 1), \quad (-5, 4, 4), \quad (4, -5, 4), \quad (4, 4, -5), \tag{2}$$

and it must be very difficult indeed to find out anything about any other solutions."

Prove that the triples (2) are the only solutions of (1) which also satisfy the Diophantine equation

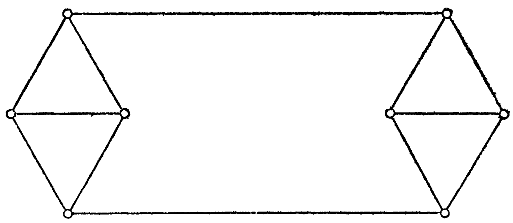
$$x^3 + y^3 + z^3 = x + y + z. \tag{3}$$

SOLUTIONS

A Notched Tetrahedron

E 1506 [1962, 232]. *Proposed by L. R. Ford, Jr., C-E-I-R, Inc., Beverly Hills, Calif.*

The vertices and edges of a certain polyhedron, from which the inside and the faces have been removed, may be imbedded in the plane, allowing stretching. Sketch the original polyhedron if the plane imbedding is as shown.



Solution by Robert Connelly, Carnegie Institute of Technology. It can be a tetrahedron with a notch in the form of a tetrahedral wedge removed from one edge. This is most easily seen by redrawing the graph with one of the triangles outermost, or by viewing the notched tetrahedron through one of the remaining triangular faces.

Also solved by D. I. A. Cohen, Serge Dubuc, E. S. Eby, J. D. Haggard, Ned Harrell, R. T. Hood, R. A. Jacobson, John McGuire, Robert Maas, D. C. B. Marsh, D. A. Moran, Mary Agnes Racki, S. J. Ryan, E. J. Schmahl, and Brian Wichmann.

A number of other "solutions" were received in which some of the distinct vertices of the given figure were incorrectly allowed to coalesce in the final polyhedron.