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SYNOPSIS

Here is given a solution to the problem: Let $ABCD$ be a tetrahedron with sides $a = BC$, $b = AC$, $c = AB$, $a_1 = AD$, $b_1 = BD$, and $c_1 = CD$ (see Figure 1(a)). Let V and R denote the volume and circumradius of the tetrahedron, respectively. Show that $6VR$ equals the area of the triangle with sides aa_1, bb_1, and cc_1.

We will give a short, transparent proof of Eiji Konishi's pentagram theorem, which was communicated by Hiroshi Kotera [1998, 291–295]. The proof is really just an exercise in the Law of Sines.

This month's "free sample" is:

2482. *Proposed by Mihály Bencze, Brasov, Romania.*

Suppose that p, q, r are complex numbers. Prove that

$$|p+q| + |q+r| + |r+p| \;\le\; |p| + |q| + |r| + |p+q+r| \,.$$