2001 Winter Camp

The "IMHO"

First Daze Problems.

1. 1967.2. Prove that if one and only one edge of a tetrahedron is greater than 1, then its volume is $\leq 1/8$.
2. 1968.4. Prove that in every tetrahedron there is a vertex such that the three edges meeting there have lengths which are the sides of a triangle.
3. 1969.1. Prove that there are infinitely many natural numbers a with the following property: the number $z = n^4 + a$ is not prime for any natural number n.

Second Daze Problems.

4. 1970.4. Find the set of all positive integers n with the property that the set $\{n, n+1, n+2, n+3, n+4, n+5\}$ can be partitioned into two sets such that the product of the numbers in one set equals the product of the numbers in the other set.
5. 1972.6. Given four distinct parallel planes, prove that there exists a regular tetrahedron with a vertex on each plane.
6. 1973.4. A person clearing landmines needs to check on the presence of mines in a region having the shape of an equilateral triangle. The radius of action of his detector is equal to half the altitude of the triangle. The person leaves from one vertex of the triangle. What path should he follow in order to travel the least possible distance and still accomplish his mission?