PROBLEM OF THE WEEK Solution of Problem No. 4 (Spring 2003 Series)

Problem: Suppose P is a three-dimensional pyramid whose flat base is a polygon which has a circumcircle. Show that P has a circumsphere.

Solution (purely geometric, by the Panel)

Let \underline{n} be the line through the circumcenter of the base and normal to the base, and let V be the apex of the pyramid. One locus for the center C of the circumsphere is \underline{n} . Another locus is the perpendicular bisecting plane of the segment that joins V to any point of the circumcircle of the base. The center of the circumsphere is the intersection of the two loci.

Also solved by:

<u>Undergraduates</u>: Chad Aeschliman (Fr. Engr.)

<u>Graduates</u>: Gajath Gunatillake (MA), Thukaram Katare (ChE), Yifang Liang (ECE), Ashish Rao (ECE), Amit Shirsat (CS)

Faculty: Steven Landy (Physics at IUPUI)

<u>Others</u>: J.L.C. (Fishers, IN), Marcio A. A. Cohen (Brazil), Regis J. Serinko (PhD, State Coll., PA)

Three unacceptable solutions were received.

Two solutions of Problem 2 were received too late to be graded.