## 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:
Undergraduates: Chad Aeschliman (Fr. Engr.)
Graduates: Gajath Gunatillake (MA), Thukaram Katare (ChE), Yifang Liang (ECE), Ashish Rao (ECE), Amit Shirsat (CS)

Faculty: Steven Landy (Physics at IUPUI)
Others: 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.

