Let $S$ be the smallest set of positive integers such that

- $2$ is in $S$,
- $n$ is in $S$ whenever $n^2$ is in $S$, and
- $(n + 5)^2$ is in $S$ whenever $n$ is in $S$.

Which positive integers are not in $S$?
(The set $S$ is “smallest” in the sense that $S$ is contained in any other such set.)

Solutions to the last problem were submitted by Rob Hill (Gambrills, Maryland), Kipp Johnson (Beaverton, OR), Steve King (Pullman, WA), Surajit Rajagopal (India), and Luciano Santos (Portugal).

Solutions for this problem can be submitted to Dr. Brian Miceli at bmiceli@trinity.edu, or you can drop them off at his office, MMH 115F. People with correct solutions will be acknowledged on the next problem. For old problems, follow the “Problem of the Week” link at www.trinity.edu/bmiceli, and if you like these problems, you may be interested in the Putnam Exam. More information on the Putnam Exam can also be found at www.trinity.edu/bmiceli.