Let the line $y = mx + b$ intersect the parabola $y = kx^2$ at two points A and B. Let C be the point on the parabolic arc AB that is furthest from the line $y = mx + b$.

Find the ratio of the area of the region bounded by the parabola and the line, and the area of the triangle ABC.

- Please **Submit** your solution to
  - *Dr. Tirtha Timsina,* ttimsina@gsu.edu or
  - *Dr. Christian Avart,* cavart@gsu.edu

  before the deadline: **Friday, November 30th, 7:00PM.**
- The WINNER will be awarded with a $15 gift certificate and will be announced in the NEXT issue.

Problem of the last month: Given two sets A and B, the symmetric difference $A\Delta B$ is defined by the union of A\B and B\A. For any $n\geq 2$, let $A_1, A_2 \ldots A_n$ be n finite subsets of the integers. Show that $A_1 \Delta A_2 \ldots \Delta A_n$ is the set consisting of the integers contained in exactly an odd number of the sets A_i, $1\leq i\leq n$.

Solution: We prove it by induction. It is clearly true for n=2. Now if $N= A_1\Delta A_2 \ldots \Delta A_n \Delta a_{n+1}$ we can write $N=P\,\Delta A_{n+1}$. We then see that an element x belongs to N is it either belongs to P and not A_{n+1} or it belongs to A_{n+1} and not P. In either case, by the induction hypothesis we see that x belongs to N if and only if it belongs to an odd number of the A_i's.

Winner: Joseph Moravitz
