

# Cal Poly Department of Mathematics

## Puzzle of the Week

October 6 - October 12, 2011

Relayed to me from Vince Bonini:

Let  $f$  be a continuous function on  $[0, 1]$ . Calculate (in terms of  $f$ )

$$\lim_{n \rightarrow \infty} \int_0^1 \frac{nf(x)}{1 + n^2x^2} dx.$$

Note: “partial credit” if you assume  $f$  is also differentiable.

*Solutions should be submitted to Morgan Sherman:*

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Email: sherman1 -AT- calpoly.edu  
Office: bldg 25 room 310*

*before next Friday. Those with correct and complete solutions will have their names listed on the puzzle's web site (see below) as well as in next week's email announcement. Anybody is welcome to make a submission.*

<http://www.calpoly.edu/~sherman1/puzzleoftheweek>