

# Cal Poly Department of Mathematics

## Puzzle of the Week

November 10-16, 2011

For an  $n \times n$  matrix  $A$  define  $\sin A$  by the convergent power series:

$$\sin A = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} A^{2n+1}$$

For real numbers  $x, y$  evaluate explicitly

$$\sin \begin{pmatrix} x & y \\ 0 & x \end{pmatrix}$$

*Solutions should be submitted to Morgan Sherman:*

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*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>