

# Problems of the Month

## September 2017

### General Problem:

A university had 12,500 students last year, but grew by 1.01% this year. How many students does it have this year?



### Calculus Problem:

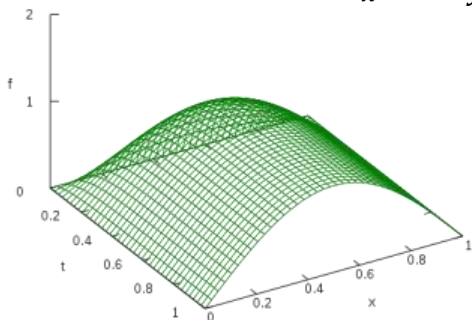
Below is a summation of so sine functions Does it converge? Why or why not?

$$\sum_{n=1}^{\infty} (-1)^n \sin\left(\frac{\pi}{n}\right)$$

### Challenge Problem:

Let  $u$  be a function of both  $x$  and  $y$ , where  $x$  and  $y$  are real variables. Solve the equation below for  $u$ .

$$u_x + 2u_y + (2x - y)u = 2x^2 + 2xy - 2y^2$$



(A solution to a certain unrelated partial differential equation)