Problem of the Month – February

Evaluate $\displaystyle\sum_{n=1}^{\infty} \frac{n}{2^{n-1}}$ exactly.

Deadline: February 28, 2009, 5:00pm.

- You may get a copy of this from the wall behind you.
- Solution and Problem of March will be posted by March 10, 2009.
- Submit your solution to Dr. Yi Zhao by *yzhao6@gsu.edu* or drop a hard copy in his mailbox before the deadline.

The problem of January:

Problem: Find the derivative of $f(x) = x^x$, $x > 0$.

Solution: Let $y = x^x$. Then $\ln y = \ln x^x = x \ln x$. Now differentiate both sides $(1/y)y' = \ln x + x(1/x) = \ln x + 1$. We finally get $y' = y(\ln x + 1) = x^x(\ln x + 1)$.

Winner: Vincent Laufer (received on Jan 24).

Mamadou Barry, Nathalie Hourdequint, and Tanya Singh submitted correct solutions after Vincent.