Problem of the Week.   March 15-22

Proposed by Bernardo Ábrego and Silvia Fernández.

Find with proof the exact value of the sum

$$\frac{1}{2^1} + \frac{2}{2^2} + \frac{3}{2^3} + ... + \frac{n}{2^n} + ...$$

Note: If you are familiar with Σ-notation, the sum above can be written as

$$\sum_{n=1}^{\infty} \frac{n}{2^n}.$$

Deadline: March 22, 2004 before 9:00 PM.
Next problem of the week: Available in our web site on March 22 at 2:00 PM.
www.csun.edu/math/probweek

Rules:

1. Open to all enrolled undergraduate and graduate CSUN students.

2. The first complete and correct solution will be awarded a five dollar prize.

3. The winner solution and the names of the authors of all correct solutions will be published in our web site (**www.csun.edu/math/probweek**).

4. All solutions must be typed and sent electronically. PDF, Latex, or Word files are preferred.

5. All steps of the solution must be clearly justified.

6. Email your solution with subject "Problem of the week" to
   Bernardo.Abrego@csun.edu.

7. Late solutions will not be considered.

8. For any questions contact the organizers

- Bernardo.Abrego@csun.edu
- Silvia.Fernandez@csun.edu

If you like puzzles and challenging problems ... join the Mathematics Department Problem Solving Workshop. We meet every Friday at 2:00 PM in FOB room 108. For more information visit our web site: www.csun.edu/math/workshop.