Problem of the Week, Fall 2006 2 November 2006

Circle One: Cadet Faculty Student (non USMA) Faculty (non USMA) Other

Last Name (Please Print):

Problem 9

Let x_0 be a positive integer, and generate a sequence, $x_1, x_{2,}....$, using the below scheme.

For i = 0, 1, 2, …

(1) If x_i is an even number, divide by 2.

(2) If x_i is an odd number, multiply it by 3 and add 1.

If we start with 20, then we can easily see that the sequence will reach 1 eventually.

20, 10, 5, 16, 8, 4, 2, 1

And the sequence will end.

If you start with 27, does it ever reach 1? Or can you prove that it is impossible?

Submission Instructions

Submit to :	MAJ Jong H. Chung
How :	As an attachment to an email(please make sure your name is in the attachment!)
With the subject line :	WP POTW

Failure to follow these directions may result in your submission not making into the pile in the right order!