

Problem of the Week-2: Two Sequences

Let

$$a_n = 1 - \frac{1}{2} + \frac{1}{3} - \cdots + \frac{1}{2n-1} - \frac{1}{2n}$$

and

$$b_n = \frac{1}{n+1} + \frac{1}{n+2} + \cdots + \frac{1}{2n}$$

be two sequences defined for positive integers n . Find a relationship between these two sequences. (Hint: They are very closely related!)

As always, show your work, fully explain and justify your answer.

Posting Date 1/25/15. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 (e-mail or hard-copy, but hard copy submissions must include a time stamp) by 4 pm on 2/4/15.