

## Problem of the Week-3: Limit of a Sequence

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Let  $a_n$  be a sequence defined by

$$a_1 = 1, a_2 = 2 \text{ and } a_{n+2} = \frac{a_{n+1} + a_n}{2} \text{ for all } n \geq 1.$$

Show that  $a_n$  converges and find  $\lim_{n \rightarrow \infty} a_n$

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

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Posting Date 9/27/14. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 (e-mail or hard-copy, but hard copy submissions must include a time stamp) by 5 pm on 10/8/14.