Problem of the Week-3: Limit of a Sequence

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 $\lim_{n \to \infty} a_n$.

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

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.