Problem of the Week-6: Limit of a Sequence

Let a sequence x_n be defined as follows: $x_0 = 0, x_1 = 1$ and $x_{n+1} = \frac{1}{n+1}x_n + (1 - \frac{1}{n+1})x_{n-1}$ for $n \geq 1$. Determine $\lim_{n\to\infty} x_n$.

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

Posting Date 11/9/12. 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 11/16/12.