We investigate a sequence defined recursively by the seeds $a_1$ and $a_2$, and for $n \geq 3$, $a_n = \frac{1}{2}(a_{n-1} + a_{n-2})$, the arithmetic mean of the previous two terms. The sequence is non-monotonic and the net distance between consecutive terms decreases by half. Thus the sequence is Cauchy and so is convergent. In a way similar to the derivation of Binet’s Formula, we use diagonalization method to find an explicit formula of $a_n$ and determine the limit of the sequence. A Java program is used to test the accuracy of the term prediction. We also investigate some generalization of this sequence. (Received September 13, 2019)