1. Find the general term of the recursive sequence \((a_n)\), given by \(a_{n+2} = 3a_{n+1} - 2a_n\), where \(a_0 = a_1 = 1\).

2. Find the general term of the recursive sequence \((a_n)\), given by \(a_{n+3} = 2a_n + a_{n+1} - 2a_{n+2}\), where \(a_0 = a_2 = 1\), and \(a_1 = 2\).

3. Solve the recurrence \(a_n = a_{n-1} + a_{n-2} + \cdots + a_1 + a_0\), where \(a_0 = 1\).

4. Let \(F_1, F_2, \cdots\) denote the Fibonacci numbers.
   a) Prove that for every positive integer \(n\), we have \(F_1 + F_2 + \cdots + F_n = F_{n+2} - 1\).
   b) Prove that for any \(m, n\) we have \(F_{m+n} = F_{n-1}F_m + F_nF_{m+1}\).
   c) Prove that for any \(m, k \in \mathbb{N}\) and \(n = km\), we have that \(F_m\) is a divisor of \(F_n\).

5. Compute the sum \(\sum_{k \geq 0} \binom{n}{3k}\).

6. Compute the general term of the sequence \((a_n)\), where \(a_{n+2} = \sqrt{a_{n+1}a_n}\), \(a_0 = 2\), \(a_1 = 8\), and find \(\lim_{n \to \infty} a_n\).