Баллы 5,00/5,00

Оценка **10,00** из 10,00 (**100**%)

Вопрос **1**

Верно

Баллов: 1,00 из 1,00

Which of the following is a Fibonacci sequence?

- a. the number of partitions, i.e. presentations of a natural number as a sum of positive non-increasing summands $(i.e., 3 = 2 + 1 = 1 + 1 + 1)$
- b. the number of sequences of 0`s and 1`s with n digits that contain no two consecutive zeroes ✔
  digits that contain no two consecutive zeroes
- c. the number of partitions of a rectangle $2 \times n$ into rectangles 2×1 ✔
- d. the number of subsets of $\{1, 2, \ldots, n\}$ that contain no consecutive integers ✔
- e. the number of compositions of a natural number into positive odd summands (i.e., $4 = 1 + 1 + 1 + 1 = 1 + 3 = 3 + 1$) ✔

Ваш ответ верный.

Вопрос **2**

Верно

Баллов: 1,00 из 1,00

The Fibonacci sequence can be continued "backwards" using the same rule: $F_n = F_{n-1} + F_{n-2}$ For example $F_0 = 0 \;\; F_{-1} = 1$ Find F_{-10}

Ответ: -55 ✔

Вопрос **3**

Верно

Баллов: 1,00 из 1,00

Find the maximal common ratio of a geometric progression a_n satisfying the following equation:
$a_{n+2} = 3a_{n+1} - 2a_n$.

Ответ: 2 ✔

The characteristic polinomial is $x^2 - 3x + 2 = (x - 1)(x - 2)$

Вопрос **4**

Верно

Баллов: 1,00 из 1,00

The sequence a_n is defined by the recurrence relation $a_{n+3} = 3a_{n+2} - 3a_{n+1} + a_n$ with initial values $a_0 = a_1 = 0; a_2 = 1$. Find a_{100}

Ответ: 4950 ✔

The sequence is in fact $a_n = \frac{n(n-1)}{2}$

Вопрос **5**

Верно

Баллов: 1,00 из 1,00

The sequence a_n is defined by the recurrence relation
$a_{n+4} = a_{n+3} - a_{n+2} + a_{n+1} - a_n$
with initial values
$a_0 = 1607; a_1 = 1707; a_2 = 1814; a_3 = 1914$
Find a_{100}

Ответ: 1607 ✔

The characteristic polinomial is $x^4 - x^3 + x^2 - x + 1$. It divides $x_5 + 1$, hence, $a_{n+5} = -a_n$