Answer on question 37754 – Math – Other

A one-dimensional cellular automaton is seeded (initialized) with the following values at time t0.

....00001010000....

The automaton evolves according to the rule 01010110. What will the automaton look like at time t3?

a) ...00101001100....

b) ...11001000110....

c) ...10101001001....

d) ...01101110110....

e) ...00011011000....

Solution

The rule can be represented as

111	110	101	100	011	010	001	000
0	1	0	1	0	1	1	0

According to this rule we get

t0:   ....00001010000....

to find the a_i^1 we take the triple $a_{i-1}^0 a_i^0 a_{i+1}^0$ and look for this combination in the table. Therefore, we obtain

t1:   ....00011011000....

t2:   ....00101001100....

t3:   ....01101110110....

Answer: d).