Subject n°11

SEQUENCES

Please do not write on the exam paper, and do not forget to give back the examination paper at the end of the test.

I. The investment in renewable energies since 2014 in developed countries increases in average by $ 10.3 billion per year.

In 2004, the investment was $ 36 billion.

We denote I_n the investment in the year $2004 + n$. Thus, $I_0 = 36$.

a) Prove that the sequence (I_n) is arithmetic and precise its common difference.

b) Express I_n in terms of n.

c) What would be the investment in 2016, if the growth stayed the same?

II. The investment in renewable energies since 2014 in developing countries increases in average by 31 % per year.

In 2004, the investment was $ 9 billion.

We denote J_n the investment in the year $2004 + n$. Thus, $J_0 = 9$.

a) Prove that the sequence (J_n) is geometric and precise its common ratio.

b) Express J_n in terms of n.

c) What would be the investment in 2016, if the growth stayed the same?

III. « 100 % renewable energy for all is achievable by 2050 and the only way to ensure the world does not descend into catastrophic climate change. Around £1.6 trillion/year needs to be invested by 2050 for this to become a reality » (Greenpeace – September 2015).

What do you think of this statement ?