



Bilkent University
Department of Mathematics

PROBLEM OF THE MONTH

Term: October 2018

Let a_0, a_1, \dots, a_{100} and b_1, b_2, \dots, b_{100} be two real sequences such that for each $n = 0, 1, \dots, 99$

$$a_{n+1} = \frac{a_n}{2}, \quad b_{n+1} = \frac{1}{2} - a_n \quad \text{or} \quad a_{n+1} = 2a_n^2, \quad b_{n+1} = a_n$$

holds. Given $a_{100} \leq a_0$, find the maximal possible value of $b_1 + b_2 + \dots + b_{100}$.